Thesis: "The modernization of the US BMEWS radar at Thule, Greenland and the Danish Social Democrats policy on nuclear deterrence, SDI and arms control".

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The work in this thesis is mine alone. All used sources are appropriately acknowledged.

Kristian Fischer 13-8-89.

KRISTIAN FISCHER

"Once deterrence fails, it fails completely; the rudimentary design and short endurance of our C3I system nullifies the whole conception of multible, time-phased counterforce exchanges. The pursuit of a bargaining advantage by means of limited attack is a purely intellectual construction that has little or no relevance to present circumstances".

Bruce Blair: "Strategic command and control" (1985 Brooklyns), p.5.

"The last five years discussion has shown that the knowledge of and the confidence with Greenlands role in security policies at least until recently has been very limited at home (Denmark), and in Greenland politicians and public opinion stands quite faltering in relation to these issues. There is clearly a need for not only increased research concerning Arctic security policy issues, but also an increased priority for these issues on the Department of Foreign Affairs, Department of Defense .... agenda".

Nikolaj Petersen: "Grønland i dansk sikkerhedspolitik", Dansk Udenrigspolitisk Årbog 1987, (København 1988), p. 48.

ABSTRACT:

This paper deals with one of the US military installations at Thule, Greenland; namely the newly modernized Ballistic Missile Early Warning System (BMEWS) radar. The thesis will address six research questions:

1 * What is the role of the radar at Thule in the US ballistic missile warning system ?.

2 * What was the rationale for the recent modernization, and how is this related to various conceptions of nuclear deterrence ?.

3 * Will the installation be able to play any role in a future SDI system or in relation to ASAT warfare?

4 * What is the relationship between the modernization of the radar and arms control, especially implications for the ABM Treaty ?.

5 * What is the Danish Social Democrats position on nuclear deterrence, SDI and arms control?.

6 * Which factors can explain the Danish Social Democrats policy in relation to the modernization of the radar ?.

The basic arguments in the thesis is, firstly that the modernization was initiated with a rationale of enhancing the quality of tactical assessment and characterization data the installation could provide. This modernization of C3I systems is one of the preconditions for the present US strategic policy of nuclear warfighting. Secondly it is argued that there seems to be a contradiction between the SD policy on the radar issue and other related security policy issues. The various factors for this apparent contradiction will therefore be analyzed.

Abbreviations and acronyms:

ACT: Arms Control Today.
ASAT: Anti Satellite Warfare.
ABM: Anti Ballistic Missile.
ALCM: Air Launched Cruise Missile
ALPS: Accidental Launch Protection System.
AWST: Aviation Week and Space Technology
AFB: Air Force Base.
ABM Treaty: Anti Ballistic Missile Treaty.
AFSATCOM: Air Force Satellite Communication system.

BMEWS: Ballistic Missile Early Warning System.
BSTS: Boostphase Surveillance and Tracking System.

CONUS: Continental USA.
CSOC: Consolidated Space Operations Center.
C3: Command, Control and Communication.
C3I: Command, Control, Communication and Intelligence.

DE: Defense Electronics.
DEW: Distant Early Warning.
DMSP: Defense Meteorological Satellite Program.
DSU: The Social Democrats Youth Organization
DSCS: Defense Satellite Communication system
DSM: Data System Modernization.
DSP: Defense Support Program.

ELINT: Electronic Intelligence.
EMP: Electro Magnetic Pulse.
ERIS: Exo atmospheric Reentry Interceptor System

FTV: Functional Test vehicle.

GHz: GegaHertz
GBR: Ground Based Radar.
GEODESS: Ground-Based Electro Optical Deep-space System.

HOE: Homing Overlay Experiment.
HEDI: High Endoatmospheric Defense Interceptor.

IONDS: Independent Operational Nuclear Detection System.
ICBM: Intercontinental Ballistic Missile.

JRSC: Jam Resistant and Secure Communications.

LPAR: Large Phased Array Radar.

MAD: Mutually Assured Destruction.
MIP: Missile Impact Predictor
MHz: MegaHertz.
MHV: Miniature Homing Vehicle .
MW: MegaWatts.
MIRV: Multiple Independently targetable Reentry Vehicles.

NCA: National Command Authority.
NORAD: North American Air Defense
NAVSPASUR: US Navy Space Surveillance
NSC: National Security Council.

OTH: Over The Horizon.

PARCS: Perimeter Acquisition Radar Attack Character System

RV: Reentry Vehicle.

SDIO: Strategic Defense Initiative Organization.
SIOP: Single Integrated Operational Plan.
SAC: Strategic Air Command.
SCC: Standing Consultative Commission.
SCF: Satellite Control Facility
SD: Social Democratic party.
SDI: Strategic Defense Initiative
SDS: Satellite Data System.
SIPRI: Stockholm International Peace Research Institute.
SSTS: Spacebased Surveillance and Tracking System.
SLBM: Sea Launched Ballistic Missile.
SLBN: Nuclear armed submarine.
SPADOC: Space Defense Operations Center.
STC: Satellite Test Center.

UCS: Union of Concerned Scientists.
US: United States of America.
USAF: United States Air Force.
USSR: The Soviet Union.

PREFACE:

Many times while I have been working on this subject, people have asked me : "Why on Earth are you doing research on a subject as the Thule radar?". The reasons for this are to be found in 3 conditions. Firstly, I was born in Greenland (Egedesminde) and this no doubt made me more inclined to take interest in US installations in Greenland. Secondly, during the autumn of 1984 I had a seminar with Michael Krasner (at Institute of Political Science, University of Aarhus, Denmark) which dealt with "New issues in nuclear strategy". During this course I read Desmond Ball's "Can nuclear war be controlled?". This caught my interest and it was on this background natural to analyze the modernization of the radar. Finally, there is clearly a need for (Danish) research concerning Arctic security issues. Professor Nikolaj Petersen has clearly expressed this several times. The lack of available research makes political debates less stringent and qualified. One implication of this is that speculations of various kind flow freely around.

It is my hope that perhaps this thesis can contribute to a more informed debate on the issue of US facilities in Greenland. Most particularly, it is my hope that the thesis can provide a point of departure for a discussion of whether the radar support deterrence and enhance the global strategic balance, or if they enhance warfighting capabilities and thereby increase global instability.

For the analysis of the radar modernization and the functioning of the radar, it has been necessary to provide rather technical material. However, I have found (under the influence of professor Des Ball!!) that a decent analysis is not possible without this element. Thus, the analysis of the radar should be valid for the next 5 years since the development of more sophisticated sensor systems will take this time to be fully developed and tested.

During my research, I had serious problems finding relevant material for the analysis of the implications of the modernization. To people who are interested in these matters, I have used the footnotes as a source for further information. Both in relation to additional explanations, but also with extensive use of references.

The thesis is the result of studies at Institute of Political Science at University of Aarhus and the Masters Programme in International Relations at Australian National University. I am indebted to many people for support during the research period. For economic support, I am very grateful to Konsul Axel Nielsens Fond, University of Aarhus and "Det sikkerheds og nedrustningspolitiske udvalg". Without their contribution, it would have been impossible to get this far.

I am most grateful to Professor **Des Ball**, who provided invaluable assistance, comments and interest, and Professor **Nikolaj Petersen** who gave very helpful supervision and advice later in the period.

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But the responsibility for the contents is mine alone.

Copenhagen, 13 August 1989,
Kristian Fischer.

CONTENTS:

If it is accepted that the use of nuclear weapons poses unacceptable risks, then extensive and elaborate warfighting plans do not make a great deal of sense"([1])

CHAPTER ONE:

INTRODUCTION :

On 5 March 1987, the Folketing (the Danish Parliament) decided not to oppose the current upgrading([2]) of the US (United States) early warning radar system at Thule, Greenland([3]). However the Folketing has stipulated that the radar should not be used as a part of an ABM (Anti Ballistic Missile) system or in connection with the Strategic Defense Initiative (SDI).

Lasse Budtz (then the leading defense spokesman of the Social Democrats (SD), the biggest opposition party) said after the decision:

"We are probably ready to accept the upgrading to a

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[1]: John Barylis "NATO strategy: the case for a new strategic concept" in International Affairs, Vol. 64 No 1, Winter 1987/88, p. 56.

[2]: In this part of the paper there should be no specific value attached to the use of terms as "modernization", "replacing", "upgrading", "changing" etc.These are simply used to illustrate the changed technical nature of the radar installation at Thule. See the later section for a discussion of the most appropriate terminology to be used in the case of Thule.

[3]: Greenland is a Danish county with a large degree of autonomy. However, foreign, fiscal, security and monetary policies are directed from Copenhagen in Denmark.

phased- array radar system, but we want to make sure that one day we are not suddenly told that now it is to be used for an ABM system or for SDI".([4])

This statement illustrates some of the uncertainty or confusion within Denmark about the reasons for the modernization and the future capabilities of the radar. The debate which raged in the Danish press and Folketing before the controversial decision, focused on, whether the modernization was merely a necessary upgrading of a 20 year old installation, or a part of a later ABM or Anti Satellite (ASAT) system. In the course of this discussion the implications for the future of arms control - and in particular the ABM treaty, were also discussed. The debate did not deal with the basic or original reason for the modernization as expressed during testimony to the US Congress; namely the perceived need in the US administration to enhance nuclear warfighting capabilities([5]). This thesis also adresses this aspect, since it is necessary for the analysis of the radar modernization.

One of the factors contributing to the confusion in Danish public debate on the issue has been the secrecy which has surrounded the US installations, and the lack of information

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[4]: Science. 20 March 1987, p.1456.

[5]: One can speculate if the reason for the lack of debate in relation to nuclear warfighting strategies was caused by lack of knowledge on this issue on part of policymakers in the Folketing. In 1983 there was a debate in the Folketing concerning the radar issue, which followed the publishing of the book "Grønland Middelhavets perle" by Paul Claesson (Copenhagen 1983). Claesson argued, as did the left wing in the Folketing, that the radar + other US military installations in Greenland were a part of a strategy of preemption. The debate in the Folketing centre around this claim, and the issue of nuclear warfighting did not arise. See Folketingets Forhandlinger (Official reports from negotiations in the Folketing) 10 February 1983, pp. 5859-5916.

emanating from the Danish bureaucracy. Information which can be gained by reading official US sources is not readily available in Denmark, and this dearth of information sets real limits for the conduct of the debate. It is therefore not surprising that both the political and media debate have been riddled with speculations and contradictory assertions.

It has been argued that the US military installations in Greenland are the most important Danish contribution to the NATO alliance([6]). It could therefore be argued that the military installations at Thule were a compensation for the very low Danish defense budget. The Danish defense expenditures are among the lowest in the alliance in relation to GDP([7]). Further, Denmark has in recent years been known as the "footnote nation" of the NATO alliance. The Danish resistance against the "double track"([8]) decision (after the decision was taken) and against contributing financially to the implementation of the decision are only a few examples of the Danish divergence from the official NATO policy. It is therefore interesting to look at the relationship between the installations in Thule and the political/military relationship between the US and Denmark. The important question in this thesis is why Denmark and especially the Danish SD are so accommodating in Greenland while at the same time being recalcitrant in other

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[6]:Petersen, Nikolaj. "Denmark, Greenland and arctic security" Institute for Political Science, Aarhus University october 1987 p. 2.

[7]: See for instance SIPRI Yearbook 1987, pp 122, 163, 173 for a description of the Danish defense expenditures. Denmark has the lowest defense expenditures (apart from Luxembourg)

[8]: the decision to deploy Pershing II and Cruise missiles in Western Europe.

areas([9]).

The thesis will on this background seek to answer six research questions:

1) **What is the role of the radar at Thule in the US ballistic missile warning system ?.**
2) **What was the rationale for the recent modernization, and how is this related to various conceptions of nuclear deterrence ?.**
3) **Will the installation be able to play any role in a future US ALPS/SDI system or in relation to ASAT warfare ?.**
4) **What is the relationship between the modernization of the radar and arms control, especially the ABM Treaty ?.**
5) **What is the Danish Social Democrats position on nuclear deter rence, SDI and arms control (the ABM treaty)?.**
6) **On the basis of the above, which factors can explain the Danish SD policy in relation to the radar issue ?.**

For the purpose of this thesis, it is intended to present the paper in chapters as follows:

CHAPTER TWO : Warning and nuclear deterrence.

A more detailed discussion of the research questions needs to be preceeded by a clarification of key concepts in this paper. Firstly, a delineation of various aspects of warning is made. This part discusses concepts such as tactical and strategic

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[9]: The US have installations in other parts of Greenland. For instance Station Nord, Sdr Strømfjord, the DEW stations and OL-5 (Detachment 3). These could be dealt with in this connection, but the scope of the thesis makes this limitation necessary.

warning; attack warning and assessment; and the horizontal and vertical integration of the US warning system. The second part of the chapter discusses the major conceptions of nuclear deterrence. The point of departure is the old discussion between Hermann Kahn and Bernard Brodie. This cleavage between these two conceptions of deterrence is followed by a discussion of the present major positions in the current debate.

CHAPTER THREE : The radar, the warning system, the modernization and nuclear strategy.

The chapter start with a description of the present US ballistic missile warning system and especially the role of Thule in this regard. Secondly, the modernization of Thule is dealt with, while the last part of the chapter relates the Thule modernization to the conceptions of deterrence.

CHAPTER FOUR : Thule, ALPS/SDI, ASAT and arms control.

During the debate in Denmark in 1987, there were several claims that the modernization was linked to such issues as SDI, ASAT and arms control. The chapter adresses these issues respectively.

CHAPTER FIVE : The radar, the political debate in Denmark and the SD policy on nuclear deterrence, SDI and arms control.

The purpose of the chapter is to analyze the SD security policy position and especially the SD position on nuclear deterrence, SDI and arms control (the ABM Treaty question). The modernization of the installation, conceptions of nuclear

deterrence and the SD position are then linked together.

CHAPTER SIX: Analysis of the SD policy on the radar issue.

Since there seems to be a contradiction between the SD security policy goals and the modernization of the installation at Thule, the reasons for the SD policy stand need to be discussed and analyzed. The chapter focuses on external factors (the US/NATO Danish relationship and the relationship between the SD and other European SD parties) and internal factors, which are divided into three categories. These categories are the "parliamentary" or "inter-party" level, the "intra-party" level, the relationship between Greenland and Denmark.

CHAPTER SEVEN: Conclusions.

This part will sum up the findings of the thesis and make a subjective assessment of which influence paths were the most important for the SD position on the radar issue.

The analysis of the radar issue in Danish politics could have been conducted at the national level. However, it does not make any significant difference to conduct the inquiry at the party level due to the very special parliamentary situation in Denmark. This is further described in Chapter Five.

The reason for the focus on the SD is that the party holds a pivotal role in the formulation of the Danish security policy. The party was in government until 1982, is currently the

biggest opposition party ([10]) and could in the near future become the leading party in a new government coalition. Furthermore, the party has been a major partner in all significant defense decisions in the Folketing. Another reason for focusing on the SD is due to the changes in the party's security policy, especially in relation to nuclear weapons. These changes include the adoption of a critical view of the concept of nuclear deterrence, and especially the emphasis on nuclear warfighting strategies. Nevertheless it should be noted that the party has not released any comprehensive or explicit stand on the concept of nuclear deterrence. The analysis of the party's stand on this issue will consequently have to be analyzed against the background of statements from leading politicians and party programs.

The analysis of the SD policy on the radar issue is primarily focused on the debate in 1987 when the major discussions took place. There has been very little controversy on this issue in 1988/89

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[10]: The 4 party Conservative/Liberal coalition government in 1987 faced a majority on security issues. Now this so called "alternative majority" has crumbled. The Danish government now consists of a 3 party Conservative/Liberal minority government.

"What is clear above all is that the profusion of proposed NUTS (Nuclear Utilization Target Selection) approaches has not offered an escape from the MAD world, but rather constitutes a major danger in encouraging the illusion that limited or controlled nuclear war can be waged free from the realities of a MAD world. The principal hope at this time will not be found in seeking NUTS doctrines that ignore the MAD realities but rather in recognizing the nuclear world for what it is and seeking to make it more stable and less dangerous" ([11]).

CHAPTER TWO :

WARNING AND NUCLEAR DETERRENCE:

This chapter seeks to provide some conceptual clarification before the six questions will be adressed in the following chapters. The purpose is to discuss the two key concepts "warning" and "deterrence". For this purpose the chapter is divided into two parts. In the first part, the importance of warning in the nuclear age will be discussed. It will make a distinction between attack warning and attack assessment, as well as a distinction between tactical and strategic warning. The second part deals with the concept of nuclear deterrence. The early and main present positions in the current debate are presented.

A) THE IMPORTANCE OF WARNING IN THE NUCLEAR AGE.

[11] :J. B. Harris and E. Marcusen (ed): "Nuclear weapons a the threat of nuclear war", (Harcourt Brace 1986): Spurgeon M. Keeney and Wolfgang K. H. Panofsky: "MAD versus NUTS: can the doctrine or weaponry remedy the mutual hostage relationship between the super-powers?", p. 109.

One note of distinction needs to be made before dealing with the importance of warning in nuclear strategy. Generally a distinction is made between strategic and tactical warning. These concepts are used differently in various connections, and it is therefore useful to emphasize the meaning attached to them in this paper. Tactical warning is used to describe warning of an "executed attack" i. e. a situation where missiles or bombers are on the way towards the US or allies. In contrast, strategic warning refers to warning of impending attack before it actually takes place. When the term warning is used alone in this paper, it is used in the sense of tactical warning. Further, attack warning essentially means determining that an attack on North America or it's allies is taking place, while the more difficult task of attack assessment involves identifying the types of threat involved, i. e. the origins, the scale of attack and the probable targets.

In recent years the increased focus upon the importance, function and vulnerability of the nuclear warning systems has resulted in several critical studies([12]). In these studies it has, among other features, been shown how essential warning is for the survival of parts of the strategic triad and decisionmaking hierarchy (political as well as military), and thereby also for the whole credibility of deterrence by retaliation. Some have even suggested, that the weaknesses in the attack warning system are so severe as to tempt military leaders to adopt a first strike

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[12]: See for instance P. Bracken: "The command and control of nuclear forces", (Yale 1983); D. Ball: "Can nuclear war be controlled", (Adelphi Paper No. 169, IISS London 1981); R, N, Lebow: "Nuclear crisis management - a dangerous illusion" (Cornell 1986), D. Ford "The button" (London 1985).

strategy, on the theory that a first strike from the Soviets would render the system inoperative and make retaliation impossible([13]). Therefore, a great deal of discussion has centered around how to improve the US warning system.

If the potential adversaries of the US know that it is not possible to penetrate the US airspace undetected, they will be much less inclined to strike first. As Edward C. Aldridge (Under Secretary of the Air Force during the Reagan administration) expressed it:

> **"The tactical warning and assessment functions have become critical in a modern world where the consequences of a surprise can be disastrous"([14]).**

Two scenarios can be to some use here in illustrating the importance of warning systems. Both assume that the Soviets are able to penetrate the US airspace without the US being aware of this. Firstly, a nuclear strike against command, control and communication (C3) centers could have the implication that the US retaliation would be limited since it could be cumbersome to get the launch orders out to the necessary forces (the part of the nuclear forces which is submarine-based is of course created exactly with the purpose of countermanding this threat). This type of "decapitating" first strike would only be realistic if it was possible to penetrate the US warning systems without US knowledge. Of course the US has taken different measures against this type of scenario; for instance, "The Airborne Command Post". Bruce Blair argues that

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[13]: For a good analysis, see for instance W. Slocombe in "Managing nuclear operations", (edited by Ashton B. Carter, Brooklyns 1987) chapter four; D. Ford: "The button", op. cit.

[14]: Air Force Magazine, February 1985 p. 64.

the C3I system always has been the weakest link in the US strategic nuclear posture ([15]). He argues that further improvement of the C3I system is necessary for nuclear deterrence.

The second scenario/example could be a strike against the US strategic retaliatory forces. Again it is assumed that the Soviets would be able to find a weak spot in the US warning system and thereby beat it. If the Soviets had the hard-target capability and the sufficient anti-submarine warfare measures, this could again mean that the US retaliatory forces (no matter the enormous destructive power) would have very little credibility. A disarming first strike would be possible assuming that these conditions were met.

These hypothetical scenarios give some credence to the importance of the present warning systems. It will later be shown that the effectiveness of various warning systems' ability to detect, track and assess an executed attack is essential for the US strategic policy of "nuclear warfighting".

Two general features in the development of the US warning system's structure will have to be briefly mentioned here. The first is the vertical integration of the military intelligence and warning systems([16]). The nuclear forces are now closely connected to the specialized intelligence organizations. The creation of North American Air Defense (NORAD) was the first step in this direction. The second element is the horizontal integration,

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[15]: Bruce Blair: "The command and control of nuclear forces" (Brooklyns 1985), pp. 4,5,282,283,285,288.

[16]: P. Bracken, "The command and control of nuclear forces" (Yale University press 1983), p. 18.

whereby nuclear forces in geographically dispersed areas have been integrated into a single centralized command ([17]).

The main reason for the vertical integration was that the time pressure became more pronounced with the advent of ICBM's and especially SLBM's. To retain an assured capability to retaliate (and in this way to deter a potential aggressor) it was necessary to have information and organizations ready to go to war 24 hours a day. The main emphasis was put upon defense against a surprise attack, since no other start to a nuclear exchange seemed to be likely. The horizontal integration came about as a consequence of the increasing complexity of the nuclear forces. Instead of having 3 arms with different goals etc, a more centralized management was needed ([18]).

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[17]: Ibid p. 7.

[18]: It has, however, been questioned how successful these attempts have been; see for instance D. Ford "The button" op. cit. in which it is argued that the US Air Force and the US Navy have different strategic goals and doctrines. See also Ted Greenwood: "Making the mirv" (Cambridge, Mass. 1975), pp. 51-82.

B) NUCLEAR DETERRENCE AND NUCLEAR STRATEGY:

Almost as long as nuclear weapons have existed, there has been intense debate over the US nuclear weapons policy or nuclear strategy ([19]). While most people agree on the broad objectives of deterrence ([20]), the consensus disappears when the question of how to achieve it arises ([21]). Some have advocated that nuclear war should be avoided at all costs, while others have argued that under certain circumstances, a nuclear war with the Soviets (or any other enemy) could be limited, controlled and maybe even won. This part of the thesis provides the main arguments in the current strategic debate. The discussion will of course have to be somewhat crude due to the limited space. This is especially true when considering the amount of literature which the subject has produced. An important delimitation here is that it should be recognized there is not only one, two or three theories, doctrines or policies of nuclear deterrence. On the contrary there are whole series of them which

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[19]: In discussions of nuclear strategy and policy different distinctions are used. The distinction between acquisition, deployment and employment policies is used by for instance Warner R. Schilling in "US Strategic concepts in the 70's" in International Security 6,No 2 (Fall 81). The more used distinction between actual and declaratory policy refers to what cleavage there may be between what politicians refer to as the US strategic goals and the actual policy as it can be reflected by acquisition, employment and targetplans. (employment policies).

[20]: The definition on deterrence as used here is taken from Leon V. Sigal:"is the aim to convince a potential adversary that the risk of seeking political objectives by military means is prohibitively high", p. 97 in "Deterrence in the 1980's", edited by R. B. Byers (Croom Helm 1983).

[21]: Pauline Kerr: "Nuclear deterrence, the joint Australian/US facilities and the Hawke Labor Government",p. 6, Forthcoming Allen and Unwin, Sydney Australia.

differs between countries and even government departments ([22]). The task of this part is just to present the main conceptions.

In some way, the main positions on todays nuclear strategy debate ([23]) stems or are derived from the debate started in the late 1940's when Bernard Brodie wrote:

> **"Thus far the chief purpose of our military has been to win wars. From now on its chief purpose must be to prevent them. It can have no other useful purpose" ([24]).**

Brodie's view was that it was illusory and dangerous to pursue traditional military goals as victory in a nuclear war([25]). Nuclear weapons could only be used to prevent general war, not win it.

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[22]: For one analysis of this aspect, see D. Ford, op. cit. concerning the rivalry between the US Air Force and US Navy. this analysis it is argued that the USAF strategic doctrine resembles preemption, where the US Navy is closer to an assured destruction position.

[23]: This discussion is limited to the arguments, which sees the deterrence as a credible concept. Several researchers have produced excellent analyses on the lack of credibility of deterrence as a foundation for the global strategic stability. See Robert Jervis: "The illogic of American nuclear strategy", (Ithaca and London 1984)

[24]: B. Brodie: "The absolute weapon", (New York 1946) p. 74.

[25]: Jeffrey D. Porro: "The policy war: Brodie vs. Kahn" in "Nuclear weapons and the threat of nuclear war", edited by J. Harris and E. Marcussen (1986 Harcourt Brace, Javanovich Publishers), pp. 90-96. It should be noted that Brodie did not altogether mean that nuclear weapons could not be used in a limited way. argued at different times in favor of a counterforce strategy and of tactical nuclear weapons, D. Ball in letter to me 4 april 1989 The idea with the description of the main positions here is of course somewhat schematic. In "Strategy in the missile age (Princeton 1959) he discusses counterforce, while "Escalation and the nuclear option" (Princeton 1966) discuss the use of tactical nuclear weapons; D. Ball in letter to me 20 July 1989.

Brodie's strongest opponent, Herman Kahn, did not agree with the view that limited nuclear war was necessarily out of the question. This stemmed from a different conception of deterrence and of what was needed to deter a potential attacker. Kahn argued that the US should preserve the possibility of a limited nuclear war. For Kahn, the scenario where the US strategic forces were attacked by the USSR, would result in a choice between "oblivion or surrender" if Brodie's recommendations were followed ([26]).

Brodie's views have later been termed "deterrence by punishment" or "assured destruction", while Kahn with the emphasis on flexibility and certain options available to policy makers have been labeled "nuclear warfighting" or "deterrence by denial".
The main positions today are to a great extent derived from this previous debate. On the one hand (the assured destruction group), there is the group which argues that it is not technically feasible to fight a limited nuclear war. Further, it is argued, that to prepare to fight such a nuclear war may make the use of nuclear weapons more likely, thus increasing the risk of a catastrophe, which would be impossible to control. This group therefore argues that strategic offensive forces and related C3I targets require only sufficient survivability to allow a small number of preplanned retaliatory strikes. Flexibility in relation to employment policies is on this basis argued to be relatively little.

The basic argument against this conception of a credible deterrence has been, that it is insufficient to protect allies as

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[26]: Ibid. p.93.

the West Europeans. The argument is, that it is not credible that the US should be willing to defend Western Europe if this meant that there was a high risk of sacrificing the whole population of the US. Flexible Response as an Allied strategy was the reaction in the latter part of the 1960's to the fact the Us was becoming increasingly vulnerable to the USSR strategic deterrent. Secondly, it is argued that if the USSR is working on creation of the ability to fight limited nuclear wars, then the US also needs this capability to posit a credible deterrent.

Therefore, there is the group of strategists ([27]), who argues that the US should be able and prepare to fight a limited nuclear war. Only then would a potential aggressor be deterred, they advocate. This group advocates what can be termed "warfighting strategies". There are of course different basic opinions within this group. One of the most straightforward and extremist experts in this group, argue that only by being able to dominate escalation and confrontation at all levels of conflict, and thereby win a nuclear war (deterrence by winning), can the US policy makers expect their threats to affect the adversary ([28]). Other proponents of warfighting strategies argue that less than being able to dominate a conflict (escalation dominance) would be sufficient for a credible deterrence. The argument is that a nuclear war cannot be won.

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[27]: A prominent member of this group of strategists is Colin Gray who have been very outspoken on this issue, see for instance "Nuclear strategy, a case for a theory of victory" in "Strategy and nuclear deterrence" edited by Steven E. Miller (Princeton 1984).

[28]: C. Gray op. cit.

However, proponents of nuclear warfighting strategies argue that an enduring C3I system is of extremely high importance. For instance, in order to be able to respond proportionately during the nuclear war, early warning sensors, which provide data on magnitude, targets and source of attack, would be crucial for the success of such a strategy. In other words attack warning and assessment data will have to be of high standards if decisionmakers wants to be in control of the situation - avoid unwanted escalation. It is in this relation that the modernization of Thule will have to be seen.

The basic difference between the three main groups (assured destruction, warfighting and warwinning), which are crude and schematic illustrated here, seems to be in the understanding of the concept "deterrence"; especially in regard to the question of what is needed for credible deterrence. The trade-off between a credible deterrent and stability seems to be the heart of the arguments([29]). There seems to be different conception of what the enemy would be prepared to risk or lose in a superpower confrontation. One could perhaps ask, as Brodie did, what political goals could justify the loss of maybe millions of human lives as even a limited exchange would result in.

So far the discussion or presentation of the strategic debate has had a tendency to put strategist into two or three "boxes". To show that it is not quite easy to put the current

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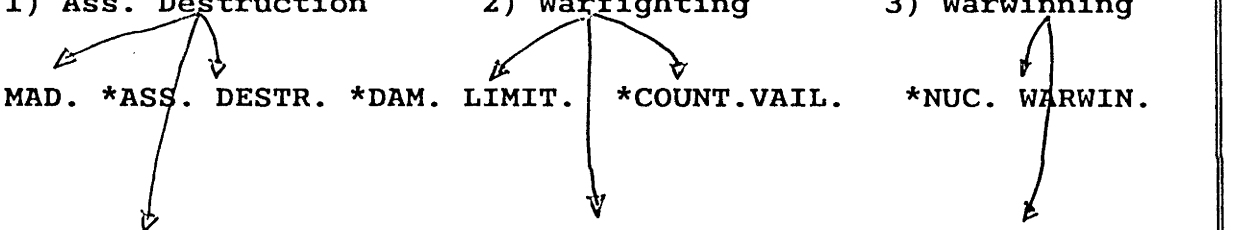
[29]: Leon V. Sigal: "Stable deterrence or nuclear warfighting" in "Deterrence in the 1990's" edited by R. B. Byers (Croom Helm 1985) pp. 96-115.

nuclear strategists in either of these "boxes" a quote is helpful:

> "..it is difficult to argue that the United States should not have any capabilities for controlling escalation in the event of a nuclear exchange. It would be imprudent for the United States to foreswear its capabilities on the grounds that they contribute to warfighting strategies - when those capabilities could be desperately needed in the event of a nuclear exchange so as to ensure that there was some means of exercising some control" ([30]).

To sum up this part of the discussion, a small and quite schematic table can be of help for the subsequent discussion:

TABLE 1: DIFFERENT POSITIONS ON STRATEGIC DETERRENCE:



MAD: Mutually assured destruction
ASS. DESTR. : Assured destruction.
DAM. LIM: : Damage limitation.
COUNT. VAIL. : Countervailing.
NUC. WARWIN. : Nuclear warwinning. ([31])

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[30]: D. Ball: "A base for debate" (Sydney 1987) p. 88.

[31]: Examples of the positions are: C. Gray "fit" in under Nuclear warwinning, B. Brodie was often close to assured destruction. Schlessinger (former US Secretary of defense) under countervailing. R. McNamara (also former US Secretary of Defense) is difficult to place since he at different times argued in favor of an assured destruction position in the bureaucratic battle with the USAF in relation to budgets. However it is probably most appropriate to conclude that in the 1960 and 1970's he was close to damage limitation (mild form of war fighting), while in the 1980's he has moved closer to an assured destruction position.

The above figure illustrates the discussion of the different positions on strategic deterrence on a one dimensional basis. The idea behind the figure is to provide a frame for the subsequent discussion of the radar modernization and the SD position on nuclear deterrence.

During the early years of the Reagan administration the need for a flexible employment/targeting policy was carried further than the previous administrations policies (the development of the strategic policy is, nevertheless, incremental). During the early years of the administration's first term in office there was a great deal of speculation whether the actual policy was one with a closer resemblance to the more extreme warwinning position. In other words closer to the Gray position. The administration backtracked and did several occasions state that "A nuclear war cannot be won and must never be fought" ([32]). It is of course difficult to know whether this covers only the declaratory policy or whether this is also the actual policy. It is beyond the scope of this paper to discuss this aspect. The main point is that the administration's position on deterrence is a warfighting posture (probably more extreme than the previous Carter administration).

For the purpose of this paper, it is further important to realize that the warfighting position on deterrence, as one of the preconditions, has a strengthening of the C3I systems. A position with an emphasis on nuclear warfighting would place far larger

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[32]: "The national security strategy of the US", January 1988 (The White House) p.15.

weight on attack assessment than the minimum deterrence position. The minimum deterrence position would regard attack warning as sufficient. General Randolph from the USAF expressed this during testimony to the US Congress:

> **"The credibility of our national defense policy of nuclear deterrence and escalation control are critically dependent upon our ability to provide unambiguously, timely, reliable and survivable warning and assessment of enemy missile attack". ([33])**

During the last years of the Carter administration, a greater emphasis on enhanced endurance and survivability of the C3I system was initiated ([34]).At the core of PD-59 was the reasoning that since the USSR doctrine or strategy recognized the need to fight a nuclear war (it was assumed that the USSR had such intentions and capability), the US needed a comparable capability in order to maintain the credibility of its deterrent across a full range of options.

The Reagan administration continued this trend, and in Reagans "Strategic Modernization Plan" the improvement of the C3I system had a very high priority ([35]). The next chapter will therefore look at the reasons for the modernization of the radar and it will be

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[33]: 18 March 1983, **Senate Armed Service, Subcommittee on strategic and theater nuclear forces,** p. 2477. See also H181-84.5 p.443 444 (16 april 1985)

[34]: D. Ball: "US strategic forces" in International Security Winter 1982/83 (Vol 7, no. 3) p. 241.

[35]: D. Ball: "US strategic forces" p. 241, op. cit. In the article it is argued that the strategic C3I system is still extremely vulnerable.therefore: "The boundary of control in any military exchange (as compared to demonstration strikes) is unlikely to lie beyond either a few days or a few tens of detonations)

argued that the purpose was to enhance warfighting capabilities. This will be done after a short description of the US early warning system.

"Attack assessment, as an extension of warning, has received attention only since the 1970's (when the idea of nuclear options for measured responses began to take hold), and substantial support only in the 1980's"([36]).

CHAPTER 3:

THE RADAR, THE WARNING SYSTEM, THE MODERNIZATION AND NUCLEAR STRATEGY:

The previous chapter provided the background for a more comprehensive understanding of the issues as raised by the decision to modernize the installation at Thule. This chapter now seeks to answer the two first of the questions as posed in the first chapter:

1) What is the role of the radar at Thule in the US Ballistic Missile Warning System?

2) What was the rationale for the recent modernization, and how is this related to various conceptions of nuclear deterrence?.

The purpose is to provide an analysis which can be used in the following chapter, which discusses the claims in relation to Thules role in SDI/ALPS, ASAT warfare and arms control.

The chapter is divided into three parts. Firstly, the present US ballistic missile warning system is described. Secondly,

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[36]: J. C. Toomay: "Warning and assessment sensors" in "Managi Nuclear Operations" edited by Ashton B. Carter (Brooklyns 1987), p. 321.

the modernization of the radar installation is analyzed. Finally, the role of the installation in relation to various conceptions of nuclear deterrence is discussed.

A: THE PRESENT US WARNING SYSTEM AND THULE:

The best way to illustrate the US warning system and thereby the role of Thule in this connection is to look at the way different Soviet nuclear weapon systems could threaten the US. By doing so, the various parts of the warning system designed against strategic attack can be explained. The Soviet strategic triad contains ICBM's, SLBM's and bombers carrying cruise missiles.

The launching of Soviet ICBM's would initially be detected by the Defense Support Program (DSP), which currently consist of 3 satellites in geosynchronous orbit. ([37])

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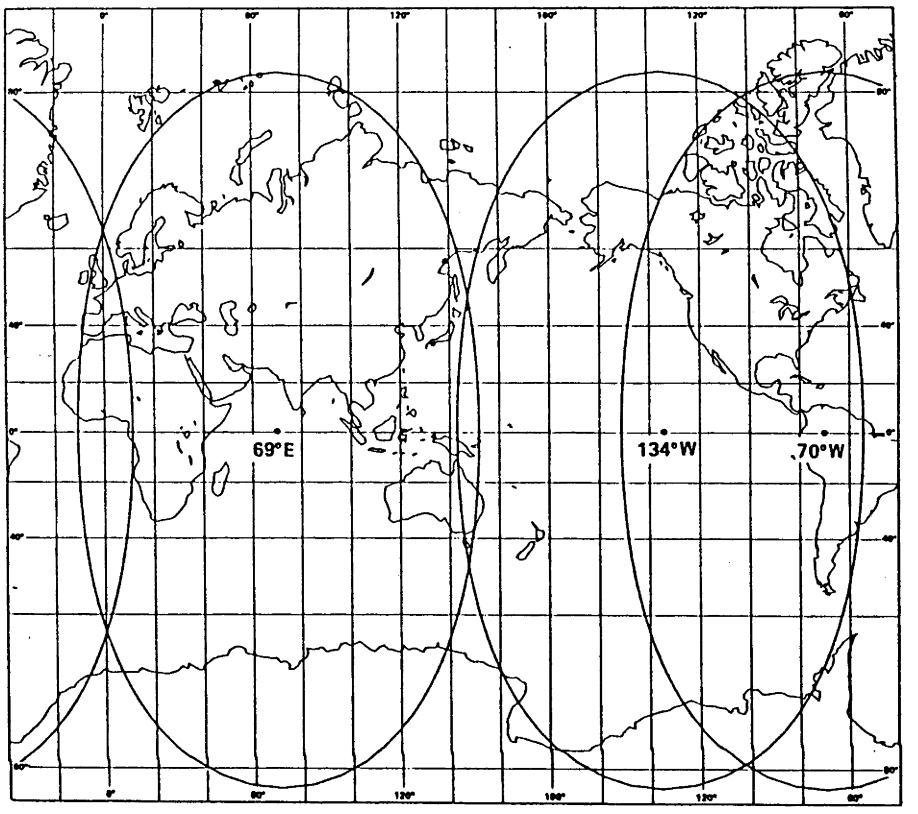
[37]: This satellite system is currently being modernized and replaced by more modern satellites, see AWST. 23 January 1989 p. 34; AWST. 20 February 1989 p. 34.

Figure 1: The DSP satellite coverage.



Source: D. Ball : "A base for debate", (Sydney 1987) p.17.

The DSP positioned at 69 degrees East would be the first link in the US warning system detecting a Soviet ICBM launch. It would do so by detecting the energy emitted by the ballistic missile during the boostphase ([38]). After the boostphase the DSP system is no longer able to track the missile and other warning systems would have to take over.

The new Over The Horizon Radar (OTH) at Alaska would probably

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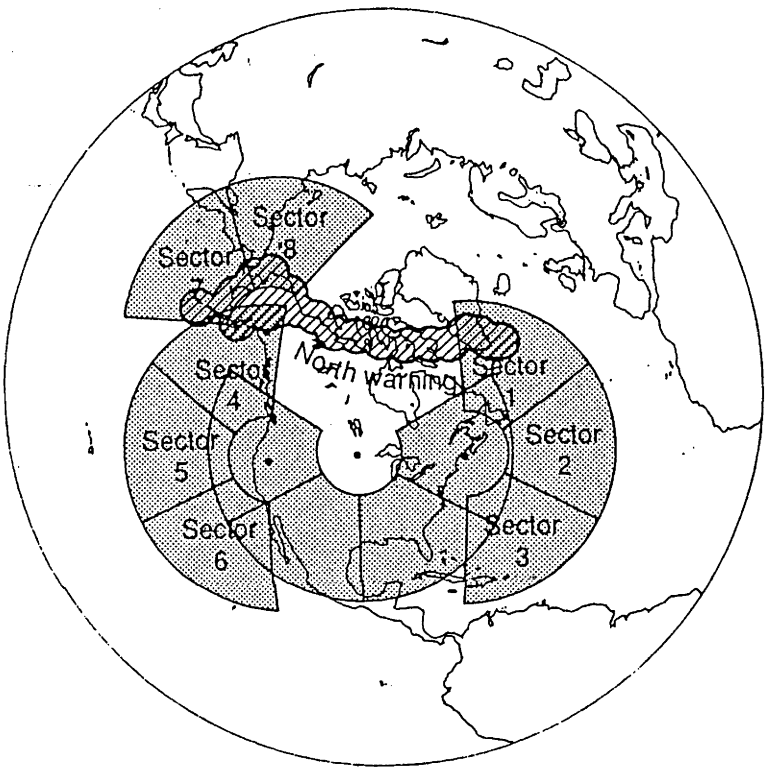
[38]: D. Ball: "A base for debate", (Sydney 1987) p. 21. See also AWST 20 February 1989, p. 40.

detect a large scale Soviet ICBM attack before the radar at Thule and other US ground based sensors([39]). The figure below show the coverage of the US OTH radars:

Figure 2: Over The Horizon radar coverage:



Source J. C. Toomay, in "Managing nuclear operations" edited by A. B. Carter (Brooklyns 1987) p. 295.

The OTH radars are created for the purpose of detecting bomber and cruise missiles, but are also capable of providing some warning of ICBM attack due to the loctaion and coverage of the

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[39]: D. Ball in letters to me 20 July 1989 and 4 April 1989 The OTH radar has a number of deficiencies which make it less reliable in relation to warning in the arctic areas, see below this information.

radar. However other radar are better able to provide better attack assessment.

It is exactly in relation to ICBMs that the radar at Thule has an important function. By far the largest number (if not all) Soviet ICBM's would "go over" the northern ice cap to hit targets in continental US (CONUS). This is simply because the path across the northern ice cap is shorter than any other way. It is important here to emphasize that by far the largest proportions of Soviet strategic warheads are land based. Roughly 60 % of all Soviet strategic warheads are deployed in this way([40]). This gives a good indication of the geo-strategic importance of Thule.

The radar at Thule is a part of the Ballistic Missile Early Warning System (BMEWS). There are three stations which make up the BMEWS chain : Thule in Greenland; Clear in Alaska and Fylingdale in England. Another station, Cobra Dane in the Aleutians, serves as a backup station for the BMEWS chain, while at the same time performing an important role in monitoring Soviet missile tests in the latest parts of their trajectory.

Figure 3 shows this system and the planned coverage after the modernizations in Thule and Fylingdales, England:

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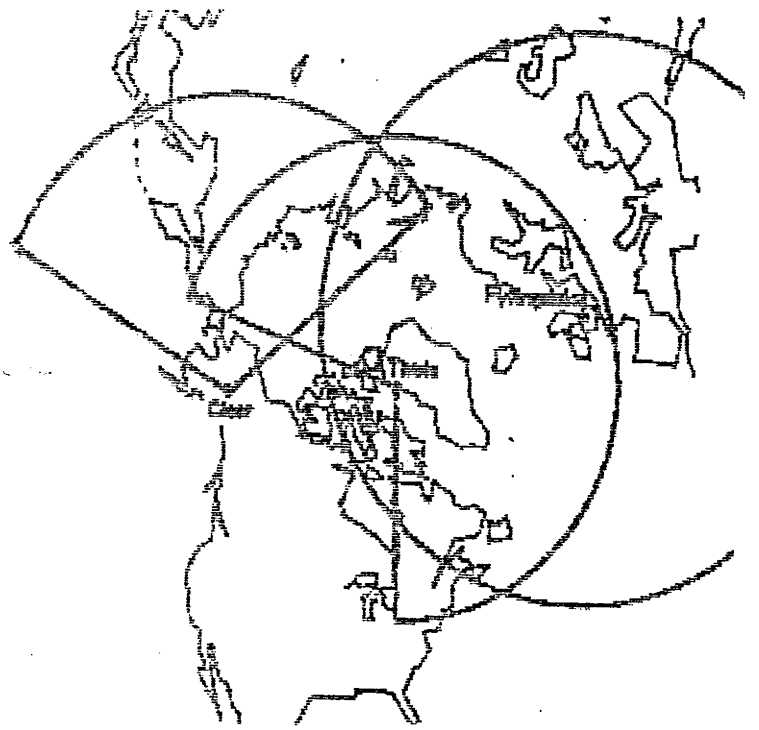
[40]: D. Ball: "Australia and the global strategic balance" (Canberra, ANU, 1989), p. 46.

Figure 3 : The planned BMEWS coverage.



Source : Defense Electronics Aug. 85 p. 96.

The BMEWS serves as the third link in detecting a Soviet ICBM launch([41]). The system in this way performs the important function of verifying a Soviet attack initially detected by the DSP satellite (69 degrees East). This is termed the "dual phenomenology", i.e. the fact that the US gets confirmation about ballistic missile attack from more than one source. The last phase

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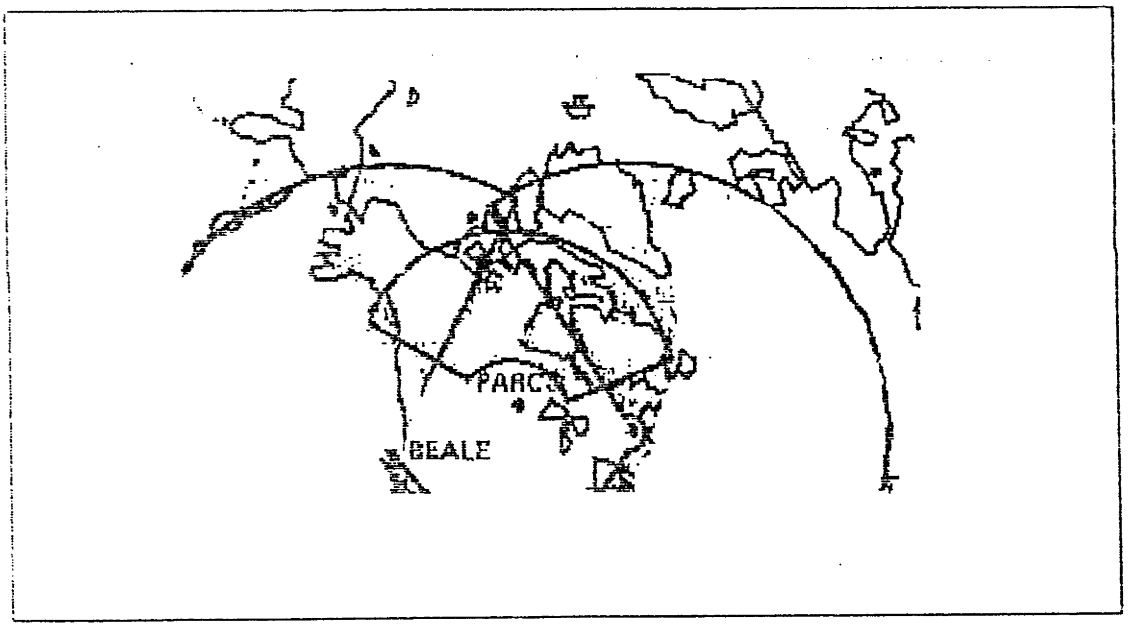
[41]: In some instances would Thule be performing the role of "second link" - it depends upon place of launch, target in the US, and scale of attack.

of the warning system for Soviet ICBM's are the radars stationed on CONUS. These consist of, for instance the Perimeter Acquisition Radar Attack Character System (which also performs a "gap-filler function" for the BMEWS system - in case a SLBM is launched from a little area not covered by the BMEWS chain) and in certain instances also the Pave Paws radars on CONUS, which coverage is shown in figure 4:

Figure 4 : PARCS and partial Pave Paws coverage.



Source : Defense Electronics, August 1985 p.100.

To recapitulate: the DSP system detects the initial launching and is only able to detect and track the ICBM's in the boostphase, the OTH radar is second link in most scenarion while the BMEWS are

the third link and detect and tracks the ICBM's after roughly 10 minutes of flight and only in the midcourse; finally, the PARCS and the Pave Paws tracks the ICBM's in the last part of their flight. The whole flight takes 25-35 minutes depending upon place of launch, trajectory and target in the US.

If the threat is Submarine Launched Ballistic Missiles (SLBM's), and the place of launch is off the US Atlantic or Pacific coast, the first "bellringer" is again the DSP system. Figure 1 showed the DSP positioning of satellites, and it can be seen that a SLBM launched from the Pacific would be firstly detected by the DSP satellite stationed at 134 degree's West, while a SLBM launched from the Atlantic would be discovered first by the DSP satellite positioned at 70 degree's West. The OTH radars on CONUS would serve as the second link while the Pave Paws radars would be the third line of warning.

If the Soviet threat were to use bombers and low flying cruise missiles (ALCM) to hit the US, the DSP system would be unable to detect the initial launch. The BMEWS chain could at the same time be avoided by flying very low and therefore under the beam of the different radars (these are not "over the horizon radars" - OTH radars). The recent upgrading of the Distant Early Warning (DEW) line, now called "The North Warning System", have taken place just to meet this new threat. It consists of 13 minimally manned radars and 39 unmanned radars across Canada and

Alaska ([42]). The PARCS, Pave Paws and several OTH radars serves as the backup function to confirm or reaffirm the information initially provided by the DEW line.

The well known false alarms in the NORAD computers such as the result of a failure of a chip (1980) and the inadvertently loaded disc (1979) showed the value of the various independent systems. Within a few minutes, the sensors were checked and since no information confirmed the warned attack, NORAD established that no attack was actually taking place ([43]).

B) THE MODERNIZATION OF THE RADAR AT THULE:

This part of the chapter deals with six aspects of the modernization. These are: the general rationale for the modernization, the early warning and assessment capabilities, spacetracking capabilities, the economy, weaknesses in relation to the installation and finally the transmission of data to CONUS.

B. 1 : the general rationale for the modernization

The general explanation for the need for modernization of the Thule radar installation given by the US Air Force (USAF), is that improved missile technology and increased threats from the Soviet side made the upgrading necessary.

In a statement to the Senate's Committee on Armed Services, General J.V. Hartinger (Commander in Chief NORAD) said that:

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[42]: General Kutyna, during testimony to House of Representatives' Armed Services Committee, 21 March 1985 p.981.

[43]: D. Ball: "A base for debate" p. 68. op. cit.

> "The BMEWS modernization program includes an improvement of the Missile Impact Predictors (MIP) which will replace pre- 1960 vintage computers with modern high speed systems. Further, an enhancement of the BMEWS tracking radars will allow discrimination of smaller targets, so that we can accurately count incoming warheads and have increased tracking capability" ([44])(emphasis added).

This statement shows that the purpose was to better be able to track and assess incoming missiles i.e. information beyond simple attack warning. The previous chapter showed that a detailed attack assessment etc is a precondition for the present US nuclear strategy of warfighting. It is therefore clear that the rationale for the modernization had some background in the perceived need to enhance warfighting capabilities.

Before the modernization, the Thule radar served as a kind of tripwire to alert the decision makers in the US that an attack was on the way ([45]). In this way bombers could be sent into the air and alert messages (or orders to launch) could be sent out to other parts of the strategic nuclear forces.

The BMEWS were built in the late 1950's, an era where a major missile attack was 20 missiles and not much more, and before MIRV's (Multiple Independent targetable Reentry Vehicles) were invented. The system was built to detect large rocket bodies of single warhead missiles. One of the implications of this is that a major attack of possibly hundreds of missiles would overload the old

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[44]: Senate's Committee on Armed services, 12 March 1982, p.4699.

[45]: Lt.General Kelly Burke in Senate's Committee on Appropriations, 18 April 1980. During this testimony, he said that the old installation was used primarily for "tactical warning and very limited attack assessment of ICBM and SLBM attacks" p. 1676.

system, since the technology was not appropriate for these scenarios. It has been argued that hundreds of missiles could show up on the screen as only one missile due to the "bad resolution"of the old radars, and the radars were not accurate enough to predict targets or launch locations in a useful manner ([46]). Further, there was the problem of decoys and reflective "chaff" intended to confuse radars. If the Soviets intended to attack the US they could "hide their warheads" in between large numbers of decoys and chaff. This would complicate attack assessment and characterization.

The new Large Phased Array Radar (LPAR) will have 2 sides, each scanning 120 degrees azimuth for a total coverage of 240 degrees. The former radar (AN/FPS-50, which was the scanning radar, and the AN/FPS-49 which was the tracking radar) had a coverage of 160 degrees. This means that the new radar has got a significantly greater coverage now that it also has the ability to look back upon the Atlantic and part of Northern CONUS. In addition to this, the beam has a greater length than before. The beam will now be able to reach approximately 300-400 kilometers longer. This means that the actual area coverage of the BMEWS installation at Thule is now 100% larger than before (see figure 4 and 5 below for this information).

The type of radars called LPAR's are very powerful instruments compared to the old installations at the BMEWS sites. The old radars form their beam optically by reflecting electromagnetic energy of the dish like a spotlight and then steer these beams mechanically by turning the dish. The LPAR's work much

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[46]: D. Ford: "The button", p. 75. and J. C. Toomay in "Managing nuclear operations", op. cit. p. 296.

more efficiently - they form their beams by adjusting the phases of numerous small sources of electro-magnetic energy which are called elements ([47]). Where these phases add up, a beam forms. The beams can then be steered by simply changing the relative phases of the elements.

The great advantage of a LPAR radar is that the phases necessary for steering the beams to any arbitrary position can be precalculated, and stored in a computer, then called upon to switch the beams anywhere within the coverage in a few microseconds. The scanning is almost instantaneous and without inertia. The ability of the LPAR to perform multiple functions in a short time and under pressure of many incoming objects makes them far more efficient ([48]).

B. 2 : Reliability, early warning and assessment:

The old system for tracking objects (AN/FPS-49) after the detection by the radar (AN/FPS 50) is also upgraded, because the new radar is far better able to detect larger number of objects (and smaller objects) ([49]). The reason for the improved ability to discriminate smaller targets which are close together is to be found in the changing of the radar bandwidth ([50]). The new radar will according to AWST be capable of detecting and tracking missile

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[47]: The radar has got 2,560 active elements in each face.

[48]: J. C. Toomay, op. cit. pp 299, 308.

[49]: J. C. Toomay p.307.

[50]: C3I Handbook 1986, p.108. And Ashton B. Carter: "Ballistic missile defense", (Brooklyns 1984) p. 70.

targets 10 square meters in size at a range of 5000 kilometers ([51]).

Each of the faces/arrays of the new Thule radar is about 26 meters in width and breadth and each contains 2,560 active elements ([52]). According to AWST ([53]), the system can lose at least 5% of the active elements before performance is affected significantly. This means that the reliability of the LPAR is far better than the old radar. If the old radar had one faulty high power tube, the system would fail. The new scanner is electronically steered and has no mechanically steered parts as in the old radar. This means that it is less vulnerable to the very hostile arctic climate. The frequency of the new radar is probably the same as used by the old radar, but is has not been possible to obtain information about this specific figure ([54]).

The coverage of the old radar and the new is shown in figure 5

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[51]: AWST 9 December 1985, p. 52.

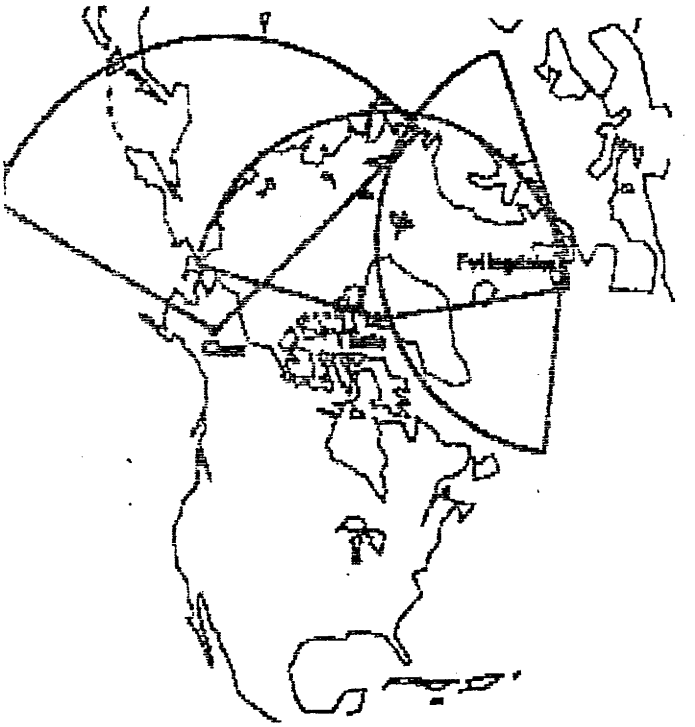
[52]: The radar has a potential for further improvement. This is due to the passive elements which in case they are activated would increase radar performance. It is generally said that increasing the number of elements by 60 % quadruples radar performance. In other words would a factor of four upgrading reduce the detectable radar cross section from 10 square meters to 2.5 square meters at a distance of 5000 km. Put differently, it would make a more detailed attack assessment and characterization easier. See J.C. Toomay op. cit. p.307, for a discussion of these aspects.

[53]: AWST 20 August 1984 p.91.

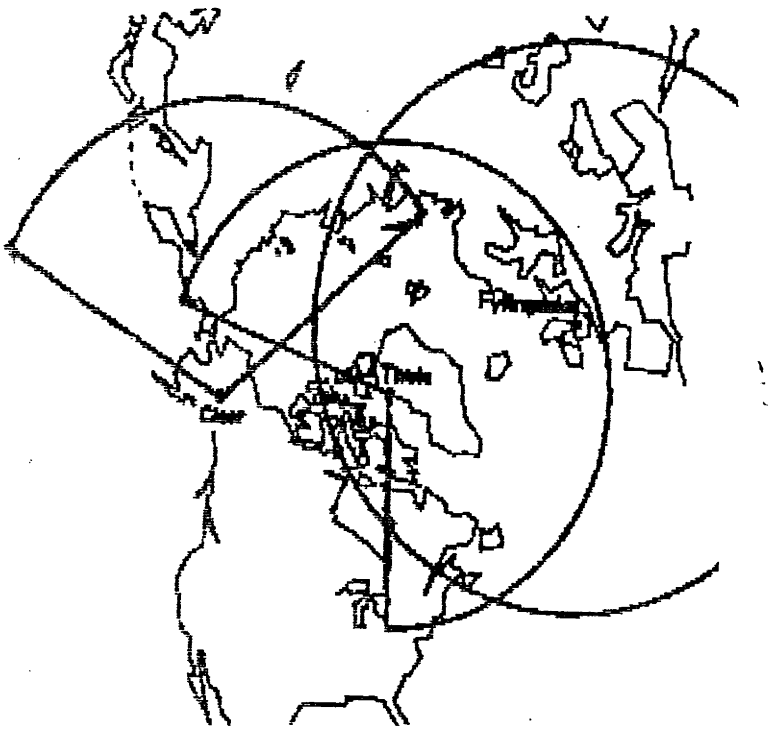
[54]: Janes Weapons Systems 1987-88 (London1987), informs that the new installation at thule in many ways is similar the Pave Paws installations in CONUS. One can therefore assume that the frequency is also the same: 420 -450 MHz. this is the same as the old installation and is considered to be the frequency used by early warning radars: see DE November 1987, p. 25. Low frequency for a radar means that it is best suited for search functions, while a frequency which is higher means that it is more useful for tracking purposes , A. B. Carter "Ballistic missile defense" p.70.

FIGURE 5 Coverage of the Thule BMEWS radar before modernization:

Before modernization:



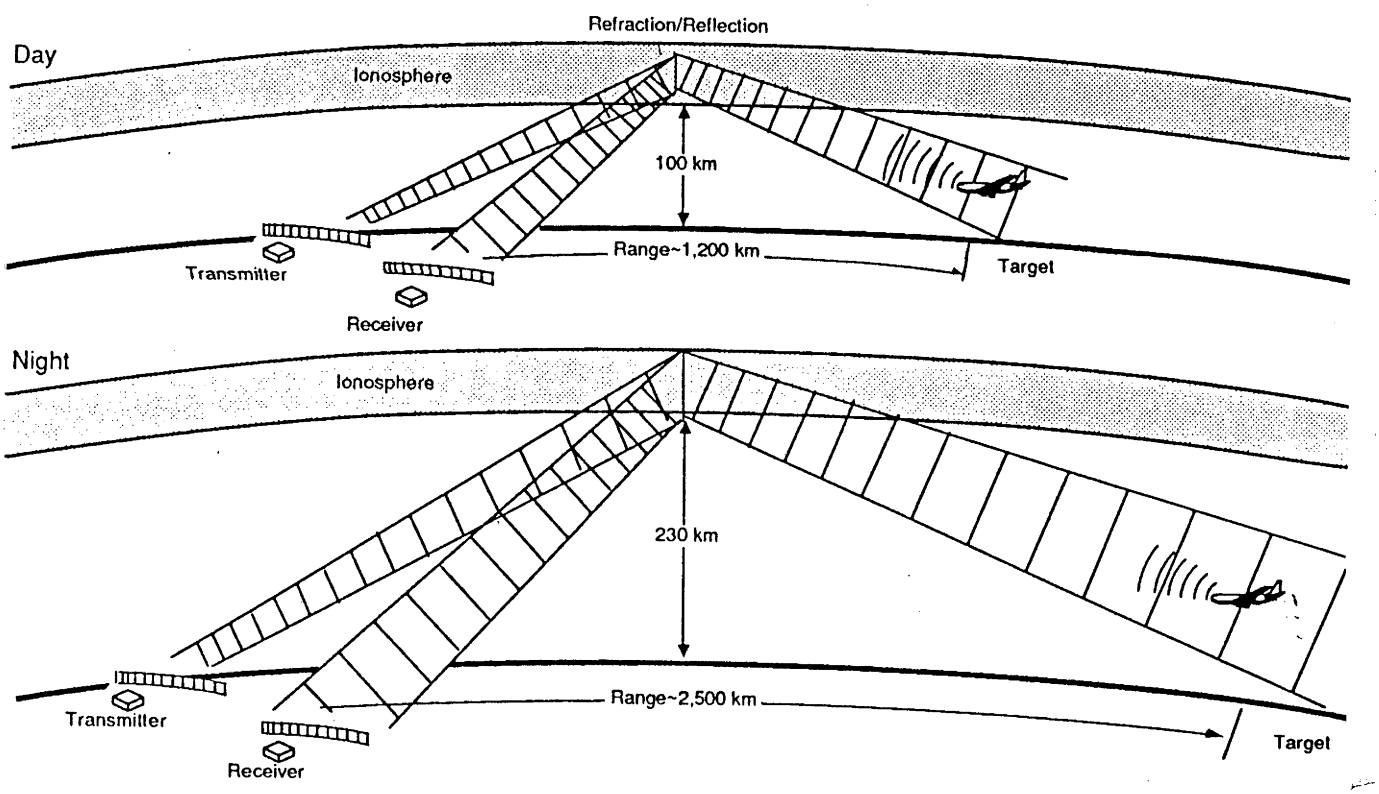
After modernization :



SOURCE : Defence Electronics, August 85 p. 96.

The figure does not give an exact picture of the coverage of the radars, because the LPAR's are not working in the same manner as the OTH radars. The OTH radars has beams which bounces of the ionosphere and thereby are capable of following the curvature of the earth. The principle of OTH radars is pictured in figure 6

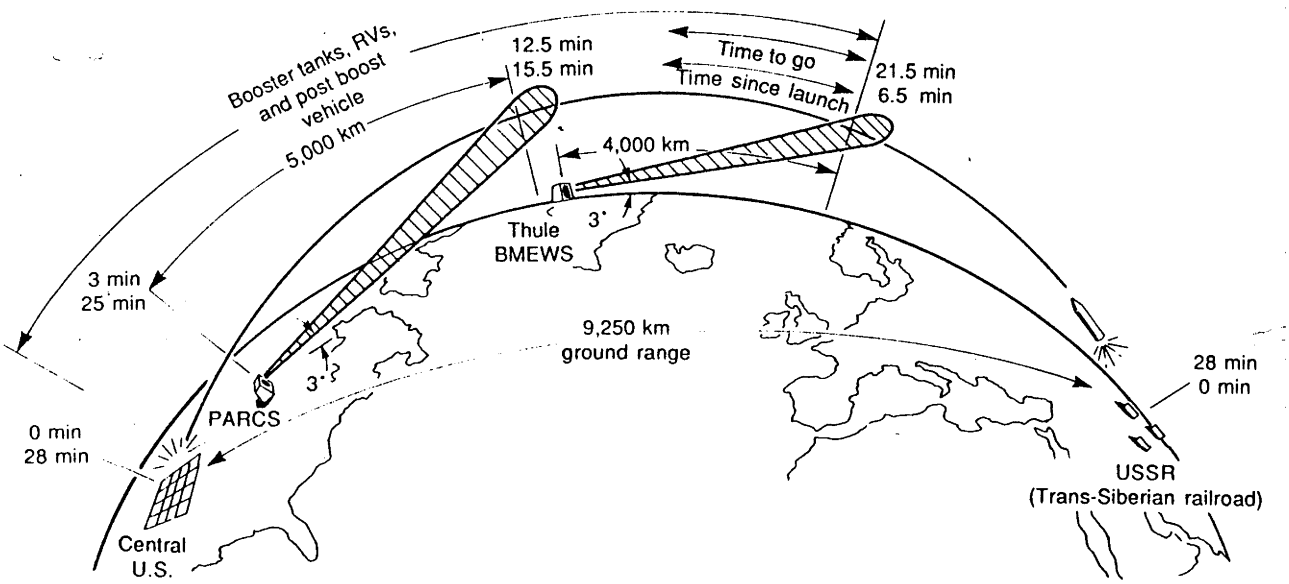
Figure 6: OTH radar principle



Source : J.C.Toomay p. 290.

The beam of the BMEWS is shown in figure 7, where it is clear that the beam does not follow the curvature of the earth:

Figure 7: BMEWS radar principle



Source : J.C. Toomay p. 298.

The implication of this, is that the area of coverage for the BMEWS as shown in figure 5 is somewhat deceptive, since the radar beam at the maximum 3000 nautical mile range would be some 1000 miles above the earth ([55]). The implication of this is that the

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[55]: DE August 1985 p.96. D. Ford in "The Button" p. 134 op. cit. informs that at a distance of one thousand miles, anything flying at less than 129 miles above the Earths surface would be undetected by early warning radars.

LPAR at Greenland, Thule, will not be able to track any Soviet ICBM's until after the boostphase because the beam searches an area above the launching pads. It is only after the ICBM has finished the boostphase and post boost (bus deployment) phase that the Thule radar will be able to detect and track the missile, it's warheads and decoys.

In the event of an SLBM attack it is a little more complicated since the result depends upon the distance from the Thule radar. However it is clear, that the closer the place of launching the better able the Thule radar is to detect any launching in the early phase of the missile's trajectory. If a SLBM is launched close to the Kola Peninsula it is clear that the radar will be unable to detect the missile until after the boostphase.

The limited coverage of the radar to 240 degrees in azimuth makes it virtually impossible for the radar to be useful for information about the late midcourse and terminal phase. Since there is only a very limited ability to look back upon CONUS (see figure 3) and the same argument as described above concerning maximum range and curvature of the earth is valid, it cannot be useful for information about the flight of missiles in this late stage of the trajectory. Other radars will have to perform these functions, for instance PARCS and Pave Paws ([56]).

In 1983 the missile impact computers were replaced. Instead of the 25 year old IBM 7090's, new CDC Cyber 170-865 processors were installed ([57]). These should make it easier to

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[56]: The OTH radars will not be very useful for information on the terminal trajectories due to the "skip zone", which means that there is a distance of several hundred kilometers out from the radar in which no reflections are possible. D. Ball in letter to me 4. April 1989. See also J. C. Toomay op. cit.

[57]: AWST 9 december 1985, p.54.

predict both impact point and place of launch.

Finally, it should be emphasized that the increased importance of the Polar Sea for the Soviet submarines has made the modernization of the radar increasingly important, since ballistic missiles launched from these submarines would be detected by the radar fairly early. The DSP satellites is now able to detect launches from the far North ([58]). The role of the Kola Peninsula in this regard as a home port for a large proportion of these SLBN's is evident ([59]). With the rise of the Northern Fleet and the ability of Soviet submarines to traverse under the polar ice, there was, clearly perceived by the US military, a threat from such submarines in both the Arctic and Northern water areas, yet the one area that lacked a radar with the capability to detect and track SLBM's was that covered by Thule. Therefore, it can be argued, it was perceived that an upgrading to the standard of the Pave Paws was needed. A quote from a hearing in the US Congress supports this notion. In explaining the present ballistic missile surveillance system and the rationale for the modernization of the Thule radar, General Kutyna said:

> **"As you can see in these southern sectors, a submarine could be in either of these or in these Northern regions near the poles, launch a missile which would impact on the United States and not be detected by any of the existing**

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[58]: The DSP system probably have a over the horizon viewing capability, which allows them to detect launches from the far North See D: Ball: "A base for debate" p. 28, op. cit.

[59]: Politiken, 22 December 1986, 2.section p. 3. "Jordens største militær base" by Harald Hamrin.

systems" ([60]).

B. 3 : The radar and spacetracking:

The new LPAR will have a coverage of 85 degrees in elevation and thereby have some space tracking function as well ([61]). It is interesting to look at the US spacetracking system and the role of the radar at Thule in this system because it has been claimed that Thule could be an essential part of a US ASAT warfare program (see next chapter).

Up to 30,000 observations a day are made by the US in order to chart present and future orbital paths ([62]); there are 5,600 plus man-made objects in space ([63]). Different surveillance systems have been created to monitor these movements. The Ground-based Electro-optical Deep-Space Surveillance System (GEODSS) was designed to monitor satellites in deep space (satellites from 3000 nautical miles and onward, geosynchronous orbits and highly elliptical orbits). Five tracking stations are presently operating at White Sands,New Mexico; Maui, Hawaii; Tagaeu, South Korea; Diego Garcia and finally another station in

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[60]: House of Representatives's Committee on Armed Services, 21. March 1985 p. 991. See also AWST 23 January 1989 p. 34. The new generation of DSP satellites now have a OTH capability and is in this way capable of detecting launches from the near the poles.

[61]: Aviation Week and Space technology (AWST), 20 August 1984 p. 91.

[62]: Defense Electronics (DE), July 1982, p.82 and SIPRI Yearbook 1987 p. 66. Of these are 5 % operational payloads; 20 % Are non-operational payloads; 25 are mission related debris; and 50% are from satellite break ups.

[63]: DE July 1982, p.82.

the Eastern Atlantic ([64]).

In addition to these radar/tracking stations, there are several systems for detecting and tracking satellites in lower orbits. Among these are the BMEWS, Pave Paws, Cobra Dane and the "NAVSPASUR" (the Navy's system). Space surveillance is essential because, if it is unknown what the Soviets are sending up, it is very difficult to know the purpose of their programs. Further, if the US does not know what else is in space, they cannot know how to respond in case it becomes necessary. It is therefore important to catalogue objects early in their orbits ([65]). This is to examine every launch and determine every ephemeris. Also data about mission payload can give information about mission and status of satellite. Finally, activity in space is constantly monitored to predict, confirm and report any space object that could survive the r e-entry into the earth's atmosphere. This is important since reentering objects can look like ballistic missiles to sensors. The prediction of the reentry make a more correct interpretation of the data from the warning sensors possible ([66])

It is not easy to get information about the capabilities of the Thule radar in relation to the space tracking mission (other than ballistic missile detecting). However, Defense Electronics informs that

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[64]: DE: July 1982, p. 83. The last station is somewhere in Portugal according to DE August 1985 p.104.

[65]: According to AWST 14 January 1985, the USSR launched a satellite (Cosmos 1.603) on 28 September 1984, which undertook extensive maneuvering and the US Space Defense Operations Center lost track of it several times during the maneuvers. Thule could have played a role in monitoring this spacecraft or in similar instances.

[66]: D. Ford: "The button" p. 85.

> ------"the BMEWS and the Pave Paws also perform space and surveillance functions, and together with Cobra Dane, NAVSPASUR and Eglin FPS-85 (Located in Florida) they form the backbone of the spacetrack system" ([67]).

It is therefore clear that besides yielding information about tactical warning and pre-impact assessment, the BMEWS performs an important space tracking function. The data is relayed to NORAD's Space Defense Operations Center (SPADOC), which has the task of following all manmade objects in space. During testimony in the US Senate it was informed that Thule is part of the newly created Space Command's sensors ([68]):

> "These are the worldwide locations. Sensors in the new Space Command that extend from Thule to Australia, from Korea to Turkey" ([69])

Even though the radar probably cannot give precise information about different object's positions in space, it can provide information about direction and speed, which gives indication about the type of orbit. When the orbit is roughly known, more sophisticated instruments can be used to give the

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[67]: DE August 1985 p.103, i. e.this was before the modernization took place. One would assume that these capabilities must be increased quite a bit after the modernization. AWST also informs that the new radar as: "...having an inherent capacity to perform spacetrack mission as well as provide early warning", 20 Aug. 1984, p. 91.

[68]: SPACE COMMAND: See AWST 11 February 1985 pp. 60-62; AWST 6 April 1987, pp. 73-76; AWST 30 March 1987, pp. 83-84; AWST 25 May 1987, p. 50; AWST 9 December 1985, p. 67-73 and DE January 1986 p. 80 for a description of the structure of Space Command.

[69]: Testimony during hearing in Senate Committee on Armed Services, 20 March 1985 p.4262. It is not all Space Command assets which are part of the SpaceTrack system. The Space Command Station at Nurrungar, Australia is not part of the SpaceTrack system; Ball in letter to me 20 July 1989.

position at a certain time. As such, a brief outline of the capabilities in regard to space tracking functions has been discussed.

B. 4: The economy and the modernization:

Another point deserves to be mentioned about the reasons for the modernization, namely that the installation is cheaper to operate after the modernization. The modernization to a LPAR instead of just an upgrading of the existing radar would almost be cost effective, while at the same time increase the capabilities of the radar enormously.

Before the modernization power consumption was an average of 8.6 MegaWatts (MW), while after the installation was finished should decrease to 2.4 MW ([70]).

During testimony to the US Congress in 1980, Lt. General Kelly H. Burke (The Air Force Deputy Chief of Staff for Research, Development and Acquisition) explained that the considered modernization of the radar would not be to LPAR standard for three reasons : Costs, longer implementation time and possible violation of the ABM treaty ([71]). When the decision to modernize the radar was taken three years later, the price of a LPAR had become price competitive and it could, on technical grounds, have been difficult

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[70]: AWST 20 august 1984 p.91.

[71]: Lt General K. burke in Senate's Committee on Appropriations 18 April 1980 pp. 1675-77: "The phased array approach, which would provide roughly equal capability, has been rejected primarily because of the substantially higher costs, the longer implementation time and the potential ABM treaty conflicts of a phased array deployment".

to resist the modernization ([72]).

B. 5: Weaknesses at the Thule radar installation.

The installation at Thule has certain weaknesses. This is important since it could be a USSR target in the early phases of a potential confrontation. In order to perform the expected mission (to supply NORAD with relevant information) two criteria will have to be met. Firstly, that it is possible to obtain relevant information and secondly that the information can be transmitted to NORAD. Since all radars are more or less vulnerable to nuclear explosions (for instance Electro-Magnetic Pulse or EMP) ([73]), this could be one of the ways the Soviets could "blind" the US eyes. Other ways to interfere could be by jamming or spoofing the installation ([74]). An attack upon the radar station by conventional weapons could easily do enough damage (radars are very soft targets) to interfere with the ability to obtain the relevant data. This goal could be accomplished easily by the Soviets by using one or a few of their conventionally armed short range missiles; for instance a sea-launched cruise missile. It is a generally accepted fact that

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[72]: Arms Control Today (ACT), March 1987 p.9: Raytheon's offer for the construction of the LPAR was now cheaper, while at the same time a qualitative improvement.

[73]: See for instance D. Ball: "Can nuclear war be controlled?" p.10-12. 50 psi would probably be enough to destroy the installation. the effectiveness of EMP hardening on radars is very difficult to be sure of, since this cannot be tested for large buildings; see DE November 1987 p.69. See also A. B. Carter: Ballistic Missile defense" p. 54, op. cit.

[74]: See J. C. Toomay op. cit. p.314-16, and D. Ford "The button", pp.73-74.

the USSR would place a high priority towards C3I targets in early stages of a conflict ([75]).

Even though the LPAR is still able to perform it's function of collecting data, this still needs to be communicated to the NORAD headquarters at Cheyenne Mountain Complex, Colorado. To quote Defense Electronics :

> **"without communication, sensors can detect, but cannot warn" ([76]).**

The radar site at Thule is linked to NORAD/SPACE COMMAND, National Military Command Post at the Pentagon, and SAC at Offutt AFB, Nebraska with cable, tropospheric scatter communications systems and Satellite Communications (SATCOM) ([77]). It also seems certain that the radar will be connected to the military headquarters in CONUS by the new system for communication: MILSTAR ([78]). If these links could be disturbed in one way or another, thereby making transmission of data cumbersome or impossible, it would to some degree negate the utility of Thule ([79], [80]) In this way Thule would only serve the function as a "bellringer", since it would be unable to provide attack assessment and characterization. In other words, Thule would only be able to provide attack warning.

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[75]: D. Ford pp. 67,73.

[76]: DE January 1986 p.84.

[77]: There is a SATCOM terminal at Thule now, which presumably uses the Satellite Data System (SDS). D. Ball in letter to me 4 April 1989.

[78]: AWST 3 April 1989, p.62.

[79]: DE January 1986 p.86.

[80]: House of Representatives Armed Service Subcommittee on Procurement and Military Nuclear Systems, 21 march 1985, p.1009-10.

B. 6: Transmission of data to CONUS:

Warning and assessment data are transmitted to NORAD, National Military Command Post at the Pentagon, and SAC at Offutt AFB, Nebraska ([81]). Simultaneously, the National Military Command Center at Pentagon starts a missile display conference with the NORAD and SAC command posts. It is the task of the NORAD commander to quickly tell all concerned whether the detected launch is a threat or not.

The SAC commander at Offutt, Ne. exercises the command and control of land-based bomber and ICBM forces and in this way the intelligence function is separated from the function of executing an attack. This organization is to some degree a reflection of the experience during the Korean war where the two tasks (although not managing nuclear weapons) were performed by the same organization with unsatisfactory results ([82]).

At the same time, NORAD is also responsible for the surveillance of space, to keep track of manmade objects in space, and several agencies have been created for this purpose in the last few years. One is the Space Command which was a result of a directive from Pres. Reagan on 30 November 1984. The operation of the radar installation at Thule is under the authority of this agency.

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[81]: AWST 20 august 1984 p. 87; AWST 11 February 1985, pp. 60-62; DE January 1986, pp. 80-89; DE August 1985, pp. 86-108; Air Force Magazine February 1985, pp 63-67.

[82]: P. Bracken op. cit. p. 55.

C) THULE AND US NUCLEAR STRATEGY

As mentioned above, the initial justification by the USAF for the modernization of the installation at Greenland, was that new Soviet missile technology (smaller warheads, decoys. MIRV's, chaff etc) have made it necessary to upgrade the more than 20 year old installation. As the US defence strategy shifted from one of massive retaliation upon attack to one of nuclear warfighting ([83]), and as the Soviets developed the ability to threaten US ICBM's with MIRV technology, the need to track smaller objects has become apparent. General Davis (SAC commander, and principal military officer in charge of both preparing and executing US war plans) said:

> "The kind of retaliation the US would respond with depends on the magnitude of the attack, and our tactical warning and assessment system is very good. It can give you the size of that attack and about where that attack is coming, and based on that information, the President and his advisers - and I am one of those advisers - are able to talk to the President, and the President makes the decision" ([84])(emphasis added)

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[83]: This took probably place in the early sixties; see D. Ball: "Targeting for strategic deterrence" (Adelphi paper No 185 IISS London 1983). Warfighting strategies of some kind have therefore had a place in the US nuclear strategy since the Kennedy Presidency
In this part of the paper the term "warfighting" is used as a quite broad category, i. e. from milder forms of warfighting to the more extreme "warwinning" version, see Chapter Two for the more detailed discussion. Other people would probably use more defined categories of the concept, but for the purpose of this analysis, it should be sufficient with this terminology.

[84]: From D. Ford, "The button" p. 44 (Interview with General Davis).

When looking at various warning systems for strategic nuclear forces in relation to the necessary information they are supposed to provide, three "variables" are important:

* **whether they can provide information about the source of attack,**
* **the scale of attack,**
* **and information about the likely point of impact** ([85]).

It is obvious that it is crucial to gain information about the source of attack, because the retaliation, hopefully should be directed at the source (the attacking country) itself. Secondly, it is important to know where the missiles are launched from because this can give information about the type of ballistic missile/missiles which are coming. It is also perceived as important for the US strategy of warfighting to know which silos are empty and which are not. The SS-18's, which are launched from reloadable launchers, are among the Soviet nuclear weapons perceived as the most threatening by the US, and in a warfighting strategy, retaliation against these would probably have a high priority.

It is important to assess the scale of attack since the retaliation is to have an appropriate size in order to control escalation.

Finally, it is important to know what sort of targets (the likely point of impact) the adversary is trying to hit - whether it is population, C3I or strategic forces. Again, in a strategy emphasizing controlled escalation, this is crucial for a determination of the retaliation : the scale and which targets.

The DSP system can generally give the information about the source of attack and is thereby the single most important source

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[85]: D. Ball "A base for debate", pp. 24-25. op. cit.

of this information. It is possible to give very precise information about the missile type on the background of this information, because the Soviet ICBM's are deployed in "fields". For instance, SS18's are located in six fields in South-Central USSR and the SS11's are deployed around the Urals and in three locations near the Mongolian border. There is in addition to these fixed based systems the new problem of land and rail mobile ICBM's, but it will not be addressed here ([86]). The DSP is able to locate the place of launch within +/- three nautical miles, which is sufficient to determine for instance whether it is a SS11 from the Svobodnyy field or a SS18 from the Zhangiztobe field etc ([87]).

To determine the scale of attack/impact points and to decide on a "suitable" response is not quite as easy as obtaining the initial information about source of attack. The DSP system gives fairly accurate information in scenarios which involve smaller scale attack, but quickly becomes saturated after this ([88]). It is here that Thule and other ground based radars have an important function.

The improved detecting and tracking capabilities at Thule make it possible to estimate a large number of objects in a trajec-

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[86]: See ACT No 7 Vol 17, september 1987, p. 34 for a description and possible problems. However, one thing should be mentioned. It is that the trend towards mobile missiles makes it more difficult for the DSP system to provide information about the type of missile launched. this could perhaps increase the in assessment of attack. On the other hand, the DSP might still be able to perform this function optimally on the basis of booster characteristics. See AWST 20 february 1989 p.40.

[87]: D. Ball: "A base for debate" p. 25.

[88]: D. Ball : "A base for debate", p. 25. op. cit.

tory ([89]). It is therefore interesting to look at the reasons for the modernization as expressed by the US Air Force as expressed during testimony to the US Congress.

The explanation for the request of funds for the modernization was:

> **"We want to determine the accurate magnitude and probable effect of the attack in progress so that our selected response is appropriate. To achieve better attack assessment, we are developing the capability for more precise tracking and improved data processing to provide better pre-impact assessment in support of critical, time sensitive National Command Authority (NCA) decisions" (emphasis added). Statement by USAF General Bernhard D. Randolph ([90]).**

The underlined part of the statement illustrates why the upgrading was necessary. If this did not take place, the US political/military decision makers would be clearly handicapped in decisions about how to retaliate, because they would not have enough precise information about the attack under way i. e. information concerning scale of attack and point of impact. This interpretation is fully compatible with the official strategy of "nuclear warfighting", by which it is sought to convince potential enemies, that no matter what sort of attack they might engage in, they will always be worse off later.

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[89]: The present radar at Clear, Alaska, which is the same type of radar as Thule before the modernization, is able to predict impact points within two miles. This attack assessment is important for determining a proportionate US response. It can be argued that Thule would be able to perform even more efficiently in this regard after the modernization, see AWST 1 August 1988, p. 65.

[90]: 18 March 1983, House of Representatives's Committee on Armed Services p. 2477.

This was also expressed in a different way during testimony to the US Congress by General Hartinger in 1982:

> **"BMEWS radars were designed to just detect a raid and say the "missiles are coming" to support the national policy of massive retaliation in the 60's. And, the radars could do that by tracking [DELETED]. Now they must not only report that the "missiles are coming" but also tell the NCA where they are coming. To do that, the sensors must be able to see [DELETED]" ([91]).**

This shows that attack assessment was the reason for the modernization. And it should be noted here that this capability for attack assessment is only appropriate for nuclear warfighting strategies as argued in chapter two.

It is, however, fairly clear on the basis of the above argument ([92]), that the modernization would still not make a perfect assessment capability possible. It is not possible to discern between decoys and warheads until the reentry phase ([93]). When decoys reach the reentry phase they start to burn up in the process and

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[91]: Senate Committee on Armed services 12 March 1983, p. 4699. See also Clive Archer: "US bases in Greenland", Cooperation and Conflict Vol. XXIII, 1988, p. 133 where Harold Brown is cited for the following:

"Programmed improvements of the Greenland BMEWS radars will produce better estimates of attack size and impact points"

[92]: A. B. Carter: "Ballistic missile defense" pp. 52, 60-62. op. cit.

[93]: A lot of research is currently being done in the US presently on this problem. See for instance AWST. 3 April 1989 p. 26.

therefore obtain a different flight pattern ([94]). Thule will not be of any specific use at this late stage, but can only give an indication of the impact point by using the missile impact prediction computers. The radar would after the modernization, be able to give a more detailed picture of an attack than the old radar, but would not be able to give an exact picture. The DSP could of course give the first rough assessment, and Thule would then be able to add to this information, while the PARCS and Pave Paws would be able to track the warheads when they reenter the atmosphere and thereby obtain a different flight pattern from the decoys, which start to burn up. Finally, would NUDET sensors on board DSP and NAVSTAR satellites be able to detect nuclear detonations and provide the more detailed information.

A statement made by US Air Force General Kutyna (who was Director of Space Systems and Command, Control and Communication)- illustrates the role of ballistic missile warning systems for the US nuclear strategy. In an answer to a question by US Congressman Mr. Kramer in a hearing in the US House of Representatives, he explained that the US ballistic missile warning system ([95]) had a certain battle management capacity :

"Yes, Sir. Do our ballistic missile early

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[94]: John Pike - in Bulletin of the Atomic Scientist, 12 April 1985 p. 13 - describes an LPAR radar as able to distinguish between reentry vehichels and decoys. I assume that he is implicitly refering to this above mentioned situation: when decoys starts to burn up in the reentry phase and thereby obtains a different flight pattern. See also Bhupendra Jasani, "Satellites for arms control and crisis monitoring" (Oxford 1987) pp. 9, 78-82. and A. B. Carter "Ballistic missile defense", p.69, op. cit.

[95]: I assume that this is both the DSP and the BMEWS systems which are included here.

> warning systems have a battle management capability in them ? Yes, Sir. To the extent that they can tell you how many missiles are coming at you and the general area at which they are launched. And therefore you can tell whether they are going after your strategic forces, whether they are going after your communications centers or after your cities. And based on that information, to know how many are coming at you and where they are going, first of all you could flush different portions of your forces, you could move your National Command Authority out of the way.
> On the other end, however, (DELETED) and therefore, you could retarget your forces so that you do not hit empty silos. If you know which silos they have launched out of, you can only go after the full ones if you want to. So in that extent you have a battle management capability, yes" ([96]).

The above quotations reflect the official doctrine of "nuclear warfighting", which in other connections have been termed flexible response. The goal is to have the ability to respond and prevail at any level of conflict. The USAF has clearly expressed that this was the aim of the US nuclear strategy. General Hartinger (Commander of the USAF Space Command) expressed this clearly on 18 November 1983 in an address to the USAF Association :

> "The (DSP system) satellite early warning system .... is tied into the warfighting structure" ([97])

The crucial point concerning these quotations would be to see the exact function of Thule in relation to the US warfighting structure. It has been established that Thule cannot be used as the

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[96]: I assume that this includes both the BMEWS and DSP systems House of Representatives's Committee on Armed Services 21 March 1985 p.996-97.

[97]: Taken from D. Ball "A base for debate" p. 74 op. cit.

best source for determining the source of attack (DSP does this much more accurately ([98]). It is also apparent on the basis of the above, that Thule has got a role in the estimation of impact point. The use of the missile impact prediction computers helps in providing information about impact points in the US.

The primary role of Thule is therefore to detect and track objects (both decoys and warheads) in the midcourse and provide both attack warning and attack assessment (scale of attack). The main reason for the modernization will probably have to be found in the increasing emphasis on attack assessment. This emphasis became clear as attention shifted away from strategies of sheer retaliation to strategies that attempt to match response to attack. It should be noted that full information about an attack would probably not be possible to achieve until after impact (if even then).

To sum up the chapter, it can therefore be said that the general structure of the US warning system is geared into a dual phenomenology; the purpose of which is to obtain information from more than one source at the same time. Early warning satellites generally detect the initial launch, while different radar systems later confirm or reaffirm attack and information about missile attack. Thule performs three main functions:

1) attack warning (dual phenomenology).

2) attack assessment and characterization (dual phenomenology).

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[98]: One can argue that Thule provides a "redundancy capacity" for the whole system, and therefore is perceived as important in this regard.

3) space tracking.

The warning and assessment capabilities are especially relevant in relation to Soviet ICBM's, and SLBM's launched from the Arctic Ocean.

The background for the modernization ([99]) was mainly to be found in a perceived need to enhance (pre-impact) attack assessment and characterization capabilities.

The modernization of the C3 system was clearly rooted in a nuclear warfighting strategy, which is extremely dependent on a properly working C3 system. Without a working C3 system, it is very difficult to believe in "escalation control" or even "escalation dominance". In other words, without a very good and survivable C3 system, it would take little time before control and command over nuclear forces in a confrontation would be lost.

The chapter also demonstrated that the modernization had some background in the need to cut operational costs. Finally, it was shown that the radar had certain weaknesses. It was argued that the radar could easily be attacked by the USSR, which is believed to attach a high value to targeting C3 installations. If transmission of data to Space Command was made cumbersome or impossible this

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[99]: It is probably difficult to argue with a great deal of certainty, which of these factors was the most important for the modernization decision. One could argue that the need for enhance attack warning and assessment was the primary motive. However, the cost aspect could just as well have been a very important factor for the final decision. Likewise it could be argued that the USAF wanted to upgrade the installation due to bureaucratic interests (they knew that the strategic modernization program had a high priority on C3I systems, which meant that it could be easier to obtain funds etc). This brief analysis shows that it is difficult to use a "Rational Actor Model" in this case. See G. Allison "The essence of decision" (Harvard 1971) for one description of the model.

would negate the utility of Thule in relation to warfighting capabilities.

"United States of America's construction of a LPAR at Thule is a direct violation of the ABM Treaty"([100]).

CHAPTER FOUR:

THULE, SDI, ASAT AND ARMS CONTROL:

In the beginning of 1987 a vigorous debate evolved in Denmark as a result of several articles in the independent newspaper "Information". In these articles and in the parliamentary debate in March 1987 ([101]), it was claimed that the modernization of Thule was violating the ABM treaty; that it was possible that Thule would be an important part of a later US SDI or ALPS project, and further that Thule could become a part of US Anti Satellite (ASAT) warfare.

This chapter is divided into three parts. The first part of this chapter will look at the role of Thule in different kinds of SDI projects. The second part will discuss Thule in relation to ASAT warfare. The final part of the chapter will look at the role of the installation in regard to the ABM treaty and arms control. The current debate about the Soviet radar at Krasnoyarsk in Siberia will also be mentioned briefly in respect of its relevance to the Thule installation.

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[100]: Memorandum from the Soviet Department of Foreign Affairs concerning the Thule installation, delivered to the Danish Chargé d'Affaires in the USSR on 4 February 1987.

[101]:See Folketingets Forhandlinger 3 March 1987.

A) THULE AND SDI.

"A radar for Star Wars?"([102]); "Radar at Thule can be used in anti missile defense" ([103]); "Lockheed confirms Thule radars role in anti missile defense" ([104]) - these were some of the headlines in Danish newspapers during 1987. This part will discuss the validity of claims such as these, i. e. if post modernization radar could play any significant role in a future US SDI system.

In discussions about the current US SDI project, it is important to discern between systems intended to protect population and systems for "point defense" i. e. for the protection of strategic forces, command centres etc. There seems now to be general agreement about the very limited feasibility of creating a SDI project for general population defense ([105]). Presently, three layers of defense are being discussed in the US: boostphase, midcourse and terminal defense ([106]). This distinction is also used in this paper. It is difficult to assess the new Bush administration's position on strategic defenses, but it seems certain that it is committed to some kind of SDI project. The more precise architecture and weapons mix are not yet known. For

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[102]: Aarhus Stifttidende 30 August 1987, p. 1 in part 3.

[103]: Information 13 February 1987.

[104]: Information 4 March 1987.

[105]: Reports from the Department of Defense indicate that the population defence as outlined under President Reagan is no longer considered seriously. See Washington Post 27 March 1988.

[106]: Harold Brown (Editor) "The strategic defense initiative", (Colorado 1987), p.121.

instance, the speculations on the first phase deployment mix of weapons and sensors varies constantly. The paper will therefore have to adopt a more general approach in the discussion of Thule and a future SDI system. An attempt will be made to explain the role of the radar installation in relation to the different layers of defense and the weapon systems which seems presently most relevant in relation to Thule.

There is general consensus about the necessity of intercepting Soviet missiles in the boostphase, if an ABM system is intended to have a high degree of efficiency ([107]). At the boostphase the missile is still relatively large, moves relatively slowly, has not yet released decoys and warheads, and the booster emits a brilliant flame which makes it easier to detect and track. If it is not possible to intercept a very high proportion of missiles during this phase ([108]), defense with a relatively high degree of efficiency is impossible. In case a large number of missiles get clear of the boostphase defense, they will be more difficult to deal with for several reasons. One is that the missiles will be able to release warheads, chaff and decoys which makes the number of objects to detect, track and destroy much larger. The difficulties in discerning decoys from warheads are discussed below. Another reason is that the objects will be smaller and move faster. If all warheads are not intercepted in midcourse they will continue to the terminal phase, where an effective

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[107]: Union of Concerned Scientists (UCS) "The fallacy of star wars", (Vintage Books NY 1984) p. 40.

[108]: According to UCS p. 57 at least 90 %.

defence against incoming warheads is virtually impossible, especially if it is intended to protect population ([109]). This is due to the possibility for the adversary to let warheads explode if they are intercepted and thereby create intolerable damage. A "salvage fused" warhead would still destroy its target if its yield is sufficient ([110]).

It has been argued above that the Thule radar even after the modernization was unable to detect and track ballistic missiles in the boostphase (unless it was SLBM's launched very close to the installation, which is somewhat unlikely). The radar would therefore not play any part in a boostphase ABM system. The DSP system, if upgraded would be more likely to perform this mission unless space based sensors of some sort can be developed for the purpose ([111]).

If a boostphase system is not likely to be effective to deal with all launched missiles, an additional system will have to deal with the "escaping" warheads and decoys. This has been termed a midcourse defence system. The obvious questions to ask here is, could Thule play a role in this concept?. The midcourse sys-

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[109]: Thule could be a part of a "deceptive basing" or "radar proliferation" deployment mode for a terminal defense; see A.B. Carter "Ballistic missile defense" p.65-66. op. cit.

[110]: UCS p.47 op. cit.

[111]: See Signal, July 1985 p. 29 and ACT June 1987 pp. 2-8 concerning research in relation to the Boostphase Surveillance and Tracking System, and the Spacebased Surveillance and Tracking System. See also US Dept. of Defense, the Strategic Defense Initiative 1985 report pp. 34-35. See also AWST 23 January 1989 p.34 and AWST 20 February 1989 p.34 for a description of the modernization of the DSP system. The current system of satellites is gradually being replaced by a new generation.

tem/defence has two options: either to be able to distinguish between decoys and warheads or to try and intercept all of the objects. It is very difficult to discern between the decoys and warheads in the midcourse since all objects in space follow identical ballistic trajectories, irrespective of their mass and drag characteristics ([112]). The implication of this, is that in case it is not possible to make this distinction, every object will have to be intercepted ([113]). If the boostphase system is not highly effective, the demand upon sensing devices and battle management capabilities quickly becomes overwhelming ([114]).

The obvious answer to this question is to attempt to create new sensing devices, which can tell decoys from warheads ([115]). The Strategic Defense Initiative Organization (SDIO) is working on these issues and is considering various technologies. Among these are: infra-red sensors, spacebased radars (operating above 100 GHz and approaching 1ooo GHz([116]), and ground based radars([117]).

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[112]: I will not go into details with the obvious counter measures, see UCS pp. 115-28. Also DE February 1987 pp. 74-78 for a short discussion of these objections. See also A. B. Carter "Ballistic missile defense" p.77-78. op. cit.

[113]: UCS p. 130 op. cit.

[114]: The SSTS works under SDIO are presently working on these issues. See ACT June 1987 pp. 2-8. And AWST 3 April 1989 p.26.

[115]: Signal July 1985 and DE August 1985 p. 108 briefly discusses future possibilities. One of the problems with a space based surveillance system is the price. If the system it is to have better capabilities than Thule or similar sensors, the cost would be enormous.

[116]: See Air Force Magazine November 1987, p. 44.

[117]: See AWST 11 January 1988 pp. 22-23: "The ground based radar remains a viable candidate for the midcourse sensor role as the SDIO deliberated on a proper mix of midcourse sensors for the

These new kinds of sensors would make Thule more or less obsolete in view of the present modernization, in relation to the whole project ([118]). There seems however to be some doubt about the likelihood of these projects succeeding in a shorter time perspective ([119]). It will at least take some years to fully develop these systems. Another possibility is that Thule is modernized and upgraded again, but it is outside the scope of this paper to deal with this possibility.

Further, it is also very unlikely that the US would have an essential part of a SDI project in such a vulnerable place as Thule ([120]). A conventional attack upon the installation would be very easy, and thereby negate the utility of the radar. The base itself is manned by a very few US servicemen, who would be able to mount only a very limited defense of the base if an adversary was determined to destroy it.

It is, however, necessary to ask if Thule would play any role in a more specific weapon system for point defense or a defense for protection against accidental or unauthorized launch (ALPS)

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initial strategic defense system, an SDI official said last week.

[118]: One could perhaps argue that Thule could provide "hands offs" for the more sophisticated sensors. But even this task would probably be limited.

[119]: The SDIO has claimed some progress in this area, but no real results have been revealed to the public.

[120]: The often cited Nitze criteria (to be effective against countermeasures and to be cost effective) would not be fulfilled in this case. The obvious countermeasures would be cheap and easy.

([121]) if this was to be deployed in the near future. If this was to be deployed in the short term before sophisticated sensors were fully developed, perhaps Thule could be of some use?. During the past year, the debate in the US about an early deployment of a limited SDI/ALPS system has among other features focused upon a system currently being developed by Lockheed ([122]). The system (kinetic kill vehicle technology) developed by Lockheed is intended to intercept Soviet (or other attacking) warheads in the mid course phase. It is the so called ERIS ([123]) (Exo-atmospheric Reentry vehicle Interception System) missile with the HOE (Homing Overlay Experiment) warhead, which in the latest part of the flight is automatically seeking the attacking warhead. The system was first announced by the Pentagon on 7. Nov 1985, and it was argued that if the program is accelerated, the deployment of a force of 100 interceptors could be accomplished within five years. Such a force, proponents argued, could provide a partial defense against enemy ICBMs and SLBMs ([124]).

It is therefore necessary to ask what role Thule would have in the Pentagon's push for an early deployment of an SDI/ALPS project. It seems that the above argument concerning the Thule radar's limited ability to discern between decoys and warheads is

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[121]: Bulletin of the Atomic Scientist, June 1988, p. 12; ACT December 1988, p. 25.

[122]: AWST 19 January 1987 p.22: "Weinburger approves ...". AWST 16 March 1987 p. 73. ACT June 1987 pp. 2-8; ACT October 1988, p.28. ACT, November 1988, p.26.

[123]: The version tested at the moment, and the one expected to be used in a early deployment system (if this is accepted by the US Congress) is called FTV - Functional Test Vehicle.

[124]: Report from Lockheed released on 2 March 1988 concerning the ALPS.

also valid here ([125]). Since it is not possible to make the discrimination, all objects will have to be intercepted. With respect to this requirement, it is interesting to ask where this information about the objects should come from. Thule seems to be performing an important function in this area because of the location of the radar and the present absence of more sophisticated sensors. The location is an especially important factor since information from sensors would have to come early for a ground based interceptor to be able to intercept in the mid course phase. Thule is one of the only sensors, which currently would be able to provide this time urgent information ([126]).

Information from Lockheed promoting the ERIS system explicitly shows that Thule is considered as one of the essential sensors for the ALPS. In a report ([127]) released to several US Congressmen, it states that Thule would perform "the warning and precommit functions". Lockheed assumes that the passive elements of the Thule radar would be made operational in about six months. However this would be far from effective against possible Soviet countermeasures, which would still be cheap and easy. This was clearly demonstrated by T. A. Postol from Stanford University's Center for International Security and Arms Control in two reports to Congressman Charles E. Bennett on 8 February and 15 March 1988 ([128]). Postol argues that even after the activation of the passive

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[125]: See T. A. Postol letter to US Congressman C. E. Bennett dated 8 February and 15 March 1988.

[126]: Staff report submitted to US Senators W. Proxmire and Bennett Johnson; released on 8 April 1987.

[127]: Lockheed information released on 2 March 1988.

[128]: See also AWST 4 April 1988 p.41.

elements of the radar, it would be just as difficult for the radar and other present technology to make any useful discrimination between decoys and warhead as if

> **"one was depending on a 35 millimeter camera to discriminate between suitcase bombs and normal luggage at an airport" ([129])**

However, Lockheed is still promoting its system in the US Congress, where it has a certain interest among policymakers ([130]). It should of course be noted that the project is private, even though it is funded by the SDIO. No decision to accept the system for an early deployment has been taken.

In the light of this information, it is interesting that the Danish resolution passed in the Folketing in March 1987 stipulated that the installation was not to be used for any SDI project. It should be emphasized here that the above outlined project (Lockheed is operating with several projects: some are ABM Treaty compliant, others which not) would not necessarily be a violation of the ABM treaty since the treaty permits one ABM site with exactly 100 interceptors ([131]). It would be difficult for Danish policymakers to argue that Thule was not to be used in relation to a system (ERIS) which is only at the research and develop-

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[129]: p. 7 in the longer version of the letter dated 8 Februa 1988.

[130]: The proposal was presented to a Senate Armed Services SubCommittee in March 1988 for the first time, AWST 4 April 1988 p.41.

[131]: Lockheed operates with several different models for an early deployment system. One system is in accordance with the ABM treaty.

ment stage ([132]). The real test for Danish decisionmakers would come if the US decided to go ahead with the deployment of such a system, in which Thule was to be one of the sensors ([133]).

B) THULE AND ANTI SATELLITE WARFARE :

In the 1987 debate which raged in the Danish newspapers, it was claimed that the installation could be used in relation to

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[132]: It can be said here that the aerospace companies always are producing proposals such as this, and therefore it is difficult for the decision makers in Denmark to have an explicit stand on this issue so early in the process.

[133]: It is, however, more important to ask what the implications would be if the US seeks to deploy a much less than perfect SDI/ALPS system. There is widespread agreement in the arms control community that a system with the aim of generally protecting population would be destabilizing (besides probably technically impossible). There is a little more uncertainty with respect to a system for protection of strategic forces. It has been argued that a less than perfect system also could be destabilizing since it could take care of a "ragged" second strike in the aftermath of a first strike. On the other hand, it has been argued that a limited system could enhance strategic stability if it was to protect strategic forces since this would secure a retaliatory capability. The ALPS in its very limited structure could still have serious consequences for strategic stability. The interceptors, as suggested by Lockheed, would for example have a certain ASAT capability . If it is useful in relation to strategic missiles, then it could be even more effective against the much more vulnerable satellites in lower orbits. Testing the ERIS interceptors would therefore not be in agreement with the Congress three year ban on testing of ASAT weapons.
Another critical issue is how the Soviets would perceive a US ALPS. If a more developed ALPS was to be developed and deployed, the Soviets would surely argue that they themselves should be allowed more than the present ABM site around Moscow. Taking into consideration the different geographical and other factors for such an understanding, it could prove very difficult to come to a final agreement between the superpowers.
A last point is that the danger of accidental or unauthorized launch might be fairly exaggerated by the proponents of ALPS. During the more than thirty years with strategic delivery systems there has not been one single accidental launch. It can therefore be argued that the resources spent on an ALPS could be better used in other ways. One could perhaps imagine other nuclear scenarios which are far more likely. Among these could be terrorism or a conventional conflict escalating into nuclear confrontation.

ASAT warfare. One headline was: "Thule radar shall also be used in ASAT warfare against Soviet satellites" ([134]). This part seeks to assess these claims.

The increased use of space for both civil and military purposes ([135]) has resulted in enhanced efforts to provide precise information about objects in different orbits around the earth. The US and the USSR are now to a much higher degree dependent upon satellites for surveillance, tracking and communication. While the US satellites are generally stationed in outer orbits, the Soviet satellites are stationed in lower orbits which makes them more vulnerable in potential ASAT warfare ([136]).

Having established, in the previous chapter, that the new Thule radar is capable of performing certain spacetracking missions, it is necessary to ask what this means substantially. In other words, what is the range/coverage of the tracking/detection radar, and how important is this in relation to Soviet and US low orbit satellites. The answer to these questions is, of course, interesting in relation to the increased emphasis on measures to "negate" (official US terminology) satellites in orbit if this should become desirable in some sort of crisis or lower level conflict. Further, it is important to be able to monitor if any potential adversary is trying to interfere or intercept your own satellites. The purpose of ASAT therefore is to hit an adversary's command and control functions in a potential conflict; this sort of

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[134]: Information 3 February 1987.

[135]: A specific distinction is not really possible because some military satellites can and are used for civil purposes and vice versa.

[136] [136]: UCS p.194.op. cit.

conflict could either be conventional or nuclear. If one could disturb communication, submarine navigation and collection of intelligence etc. of the adversary, one would be ahead in the conflict other things being equal. The considerations concerning ASAT warfare were clearly expressed during testimony to the US Senate:

> **"For Space Defense we turn to the F-15 program. If there were a satellite threatening our space craft and a decision were made to take it out, or if there was a Soviet satellite providing support to ground forces and we decided to negate that, decision would be passed to the Operations Center at Cheyenne Mountain" ([137]).**

It is however important to emphasize that satellites (and the tracking of them) also have a stabilizing purpose. The military early warning systems are the keystone in deterring nuclear attacks. No adversary to the US or it's allies would be able to launch a nuclear attack without the US military being aware of it. The same principle applies to other satellites, which give information about the other side's forces etc. It is only when satellite detecting/tracking capabilities are coupled with an ASAT capability it could become destabilizing.

Both the US and the USSR currently have programs under development for performing the task of "negating" satellites, or meeting the threat towards their own satellites. The US program is the ASAT weapon (MHV = miniature homing vehicle) launched from a F-15 plane in the air ([138]). The Soviet effort is concentrated upon

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[137]: Committee on Armed Forces, Subcommittee on Strategic and Theater Nuclear Forces, 20 March 1985, p.4270.

[138]: UCS pp. 202-205. op. cit.

a system of ground launched missiles, which goes into orbit after launching, homes on it's target satellite by radar, and it's warhead then explodes, destroying the target with pellets ([139]).

In relation to ASAT warfare, it seems that the US could have more to lose than the USSR if the build up of capabilities continues, since it is more reliant on space systems for surveillance, warning, communication, meteorological and navigation ([140]). It is difficult to imagine how the US would be able to operate effectively in the modern battlefield without these systems.

The question of whether the US should proceed with the development of ASAT weapons is therefore one of the most important and pressing defense issues currently facing the US and indirectly also the Western alliance ([141]). The Reagan Administration believed that the US must have an ASAT capability to deter attacks against it's own space systems since the USSR has got a working ASAT system. However, the USSR has on several occasions indicated that they are willing to limit the development of these systems ([142]) and several of the US allies have also expressed concerns over the current trends ([143]).

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[139]: UCS pp. 200-201. op. cit.

[140]: Senate Committee on Appropriations 18 April 1980 p. 1352.

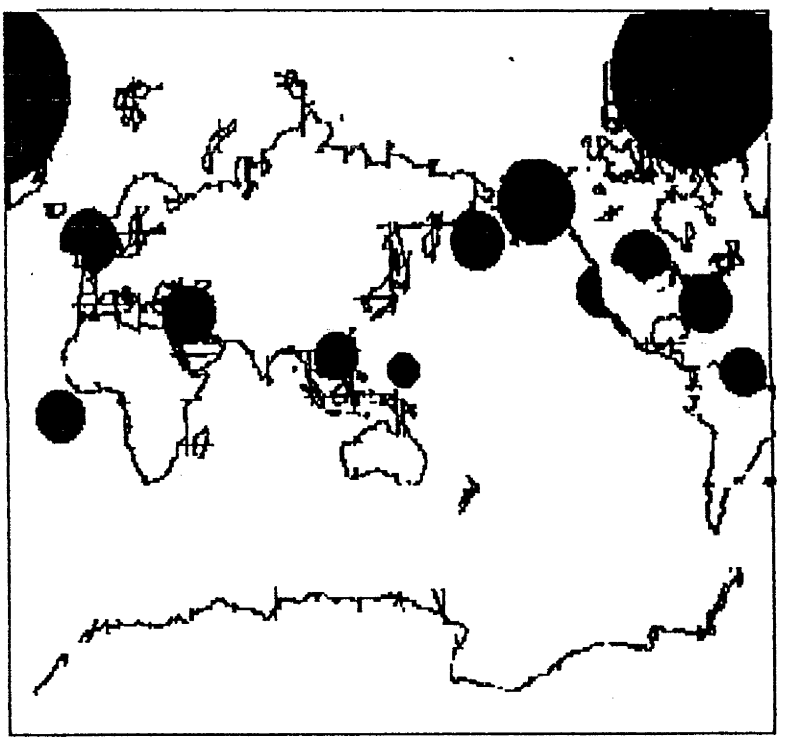
[141]: It is of course the US which has the initial decision on the issue of proceeding with the plans. However, as in relation to the US SDI project, several allies have voiced concern on these matters.

[142]: "Soviet legal view on military space activities" by Malcolm Russell in "National interests and the military use of space" edited by W. J. Durch (Harvard 1984) pp. 169-200.

[143]: There would be several problems in reaching an agreement even if the political will to so existed. These include verification and the exact definition of what constitutes a satellite system. The role of ground stations is vital and these

Figure 8 is derived from a hearing in the US House of Representatives Committee on Armed Services where the USAF presented their space programs for authorization request. The figure shows the coverage of their space tracking network ([144]) at that time (i.e. before the modernization) .

Figure 8 : US Spacetracking Capabilities.



Source : US House of Representatives Committee on Armed Services, 21 March 1985 p. 1000.

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must therefore be protected just as the satellites themselves. Further, the link between the satellites and the ground station should also be protected against interference. It is clear that these conditions would pose serious problems for the negotiators.

[144]: March 1985 p. 1000. Redrawn because of the poor quality of the chart.

The main problem with the present system is that the different radars can only detect/track objects which pass through "on top" of the radars and within the range of the beam. In other words, the radar is limited by the range and the horizon. This means that unless a satellite passes through one of the circles shown on the map in their orbiting around the earth, they will not be detected, tracked and catalogued. This is one of the reasons for the great interest from the US side in developing space based sensors of some kind (another reason is that it would reduce US dependence upon foreign bases).

The role of Thule can only be illustrated if one also knows where the US and Soviet satellites are in orbit (the inclination) and compares this with the tracking capabilities of the Thule installation.

If Thule is to perform an important function one of two criteria must be met : either that many satellites can be monitored from the base, or that the few satellites which can be monitored, are very important in various connections.

Since geostationary satellites are out of sight for the installation at Thule, only highly elliptical and low orbiting satellites can be detected.

The most important variable in relation to the Thule radar and detecting/tracking capabilities of low or highly elliptical orbiting satellites is the inclination (angle between the orbital plane of the satellite and the equatorial plane of the Earth) of the satellite. If the perigee is somewhat less than 5000 kilometers (dependent upon the distance from Thule) an "educated guess" would

be that satellites with an inclination ranging from 75 to 100 degrees could be detected from Thule ([145]). An orbit with an inclination of 90 degrees would be used to pass the polar regions.

Because the Soviets have important facilities in the Arctic regions (for instance the Kola Peninsula and nuclear submarines) they use highly elliptical orbiting (Molniya orbits) satellites for their communication etc. These have an apogee of 40 000 km and perigee of 500 km. The position close to the North pole is the distance which is the furtherest away from the Earth, and Thule is therefore unable to track them. However, the USSR has some satellite systems which orbit within the purview of Thule. Among these are navigation satellite systems (Ex. NAV 2 and 3), some meteorology systems (Ex. Meteor 1 and 2), electronics intelligence system (Ex. ELINT 2) and also several photographic intelligence systems (Ex. Low Resolution and HI Resolution 2) ([146]). For the purpose of ASAT warfare the number of USSR satellites which orbit within the purview of Thule is, however, relatively little.

The US SDS (Satellite Data System) satellites, which handle communication with the forces in the Arctic are positioned in Molniya orbits ([147]). Neither of these satellites would be detected by the radar at Thule. Again the reason is that they will be at a distance too far away from Thule when they pass the installation.

The US has for instance two navigation satellite systems

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[145]: Thule Air Base is positioned on 77.40 degrees North and 69.00 West.

[146]: UCS p.190-93 op. cit.; see also SIPRI yearbooks 1986 pp.78-84 and 1985 pp. 149-56.

[147]: UCS p. 187. op. cit.

(Transit and NOVA), two meteorology systems (NOAA and DMSP), three photographic intelligence systems (KH-9, KH-11 etc) which have an inclination and perigee within these limits.

Finally, the main limitation for the location at Thule in this regard, is that the radar will only be able to track the passing satellites for just a few minutes and that most satellite systems are thus out of "sight" from the radar.

On the basis of this information, it is difficult to term the radar as "an essential part" of the US spacetracking system. This is especially true when the question of ASAT warfare is being dealt with.

Even though the capabilities of the radar at Thule are limited in relation to ASAT warfare, it is an area which the Danish Government and political parties would have to adress. This would pose difficult problems for political decision makers, since it is difficult to discern between the stabilizing and destabilizing functions of the radar's spacetracking capabilities.

C) THE RADAR AT THULE AND ARMS CONTROL:

The last and most intensely debated issue discussed in the 1987 debate was the implications of the modernization in relation to arms control especially the ABM Treaty. It was claimed by the opponents of the modernization that the upgrading to LPAR standard could lead to a process which could be detrimental to the ABM Treaty. Some of the claims and concerns relating to this issue were:

"Thule radar is not violating the ABM Treaty"([148]) and "In sum, both the US and USSR are constructing LPAR's that violate the ABM Treaty" ([149]). For the purpose of this discussion, two subjects will be dealt with; firstly, the role of the modernization of the radar at Thule in relation to the ABM treaty, and secondly, the role of Thule in monitoring for instance USSR missile tests and thereby also verification of arms control agreements.

C.1: Thule and the ABM Treaty:

Grey areas in arms control agreements often presents substantial problems ([150]). Among these were the radar controversy between the US and the USSR, the dispute about tactical ballistic missiles and finally the problem presented by the possibilities of ASAT weapons. The main problem is that arms control agreements and treaties are often hard to prove, since situations occur which are not foreseen.

LPAR's importance in an ABM system was acknowledged in the negotiations of the ABM treaty, and it was therefore agreed that restrictions upon them were necessary. Because of the complexity and size, it takes years to build them, and it is therefore perceived that they are the long lead time for an ABM system.

One important distinction is whether a violation is

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[148]: Article in Information 27 January 1987 by US Information Agency.

[149]: ACT March 1987: Peter Zimmerman: "The Thule, Fylingdales, and Krasnoyarsk radars" p, 9.

[150]: John Pike in Bulletin of the Atomic Scientist, April 1985 pp. 12-15.

contradictory to the letter or the spirit/goal of the treaty ([151]). This is crucial since a dispute over actual compliance with treaties is often used for political purposes and in political battles. One such example is the case of whether Thule and Krasnoyarsk are violating the ABM treaty ([152]). These violations could have been dealt with in the Standing Consultative Commission (SCC), but were used exactly for political purposes.

In the case of Krasnoyarsk, there is almost consensus that it is a clearcut violation of the treaty since it is not located anywhere near the periphery of the USSR territory. The disagreement is really whether it has got serious military implications. The critics (the US administration) argue that the radar is a part of a later Soviet ABM system, while the less concerned critics (more or less the arms control community) argue that the radar is simply an early warning radar intended to fill in a gap in the USSR warning system towards the north east. Everybody apart from the Soviets agree that the main function is not spacetracking as the Soviets claim. This is due to the direction of the radar and

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[151]: One can perhaps argue that this distinction more reflects how a legal ("the letter of the treaty") and a political ("the spirit") argument would sound. In other words, that the political decision makers would look more to the spirit of the treaty in the absence of such a decisive institution as a "Supreme Court" For the solution of the issues in the case of Thule and Krasnoyarsk, it would perhaps be easier to reach an agreement if the purpose was to uphold the spirit of the Treaty more than the letter.

[152]: It seems that the work on the Krasnoyarsk radar has virtually stopped. The Soviets have now offered to close down the installation before it reaches operational status, see ACT November 1988, p. 29. The question of whether a modernization of the installation at Thule would be a violation of the ABM Treaty surfaced for the first time in 1985. See Information 11 February and 30 October 1985.

it's frequency ([153]).

In the case of Thule, the US administration argues that the new LPAR is just a "modernization" of the old installation and therefore permitted by the ABM treaty. The administration's opponents on this issue argues that this is not the case, but that the LPAR in fact is a new installation. The important parts of the treaty in this respect are Articles VI (b), VII and Agreed Statement F.

Article VI (b):
To enhance assurance of the effectiveness of the limitations on the ABM systems and their components provided by this treaty, each party undertakes:
(b): Not deploy in the future radars for early warning of strategic ballistic missile attack, except at locations along the periphery of the national territory and oriented outwards.
Article VII:
Subject to the provisions of this treaty, modernization and replacement of ABM systems or their components may be carried out.
Agreed Statement F.
The parties agree not to deploy phased-array radars having a potential (the product of mean emitted power in watts and antenna area in square meters) exceeding three million, except as provided for in Articles III, IV, and VI of the Treaty, or except for the purposes of tracking objects in outer space or for use as national technical means of verification.

It is the interpretation of these parts that the argumentation centres around. Several points will be made in relation to these conditions.

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[153]: See A. Mack, "Threats to the ABM treaty", Working Paper No 21, (Australian National University, Canberra 1987), pp.1-7.

Firstly, there is the disagreement about the potential of the radar and the provisions in the treaty - Agreed Statement F. P. Zimmerman, who has done extensive research on the radar issue and arms control, argues that the potential of the radar at Thule will be above the limits set in the treaty ([154]). The potential of a radar is calculated as the product of the average power emitted multiplied by the area of it's face ([155]). Zimmerman argues that the potential of Thule will be "well over the threshold" ([156]). The potential is set in the Treaty at the maximum to be three million units, while the potential of the LPAR at Thule will be up to forty million units ([157]). The Soviets have also noted this and filed in an official memorandum to the Danish Department of Foreign Affairs concerning this point ([158]).

Secondly, there is the disagreement about the term "on the periphery of the nation" as it is reflected in Article VI (b). The critics of the modernization argue that since Thule is not a part of US territory, there cannot be any case for the new radar. It is not quite clear if a LPAR outside a contracting nations periphery is permitted by the Treaty. LPARS on the periphery are clearly legal, while LPAR's inside the territory are forbidden, except for

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[154]: ACT March 1987 p.9; see also common agreed statement F.

[155]: Agreed statement F.

[156]: ACT March 1987 p. 9.

[157]: Information 15 March 1988.

[158]: 4 January 1987, Memorandum released as press information from the USSR Embassy in Copenhagen.

the uses as described in Agreed Statement F ([159]). Raymond Garthoff who negotiated Article VI (B) argues that the treaty does not allow room for a "permissive" interpretation. He argues that: "no radar installation for early warning in the future could be deployed outside the national territory" ([160]). The Reagan administration's answer to these points is that since the radar is just modernized, it is perfectly legal with the LPAR in this location i. e. that the Treaty "grandfathered" the existing sites. Therefore, the argument is really whether the radar is just modernized or is in fact a new radar. On this basis the question is what constitutes the difference between a "deployment" and a "modernization". The Treaty does not discuss this aspect. It is, however, clear that no parts of the old installation are used in the new LPAR, and this has led the critics to use the following analogy:

> **"It is like building a nuclear power plant in place of a wood stove and calling it a modernization" ([161]).**

The critics point out that the new LPAR radar is totally different in design and construction from the old radars and thereby has immense new potential. Stephen I. Schwartz of University of California points out that the Secretary of Defence, Caspar Weinberger in a report to Congress for the fiscal year 1986 referred to

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[159]: 1) Spacetracking; 2) Within small ABM missile and deployment area permitted by the Treaty; 3) For national technical means of verification; 4) At Abm test ranges.

[160]: Information 5 March 1987.

[161]: See "Radar trap and opportunity", New York Times 29 January.

the US "Replacing obsolete radars", while it in the 1987 report was termed "modified radars" ([162]). The reason for this change of terminology could be found in the erupted debate about the legality of the modernization, which started just after the 1986 report.

Raymond Garthoff, who was a principal US negotiator of the ABM treaty, and who in fact was negotiating the article VI ([163]) argues that the modernization to the LPAR standard is not allowed within the frame of the treaty. He argued in a letter to the New York Times on February 14 that Article VI,b and Agreed Statement F grandfathered or excepted only the existing radars and not the sites at Thule and Fylingdales ([164]).

In a statement made to the Folketing, the Foreign Minister Uffe Elleman Jensen, argued that the new LPAR at Thule was legal according to the ABM treaty. His argument was based upon an interpretation of the ABM treaty whereby it is perceived, that if an installation is not explicitly forbidden, it is then legal. He argued further, that the radar would not be contrary to the treaty's objective (or spirit) since it was not and could not be used in a SDI project ([165]).

P. Zimmerman argued in a reply to the Foreign Minister's statement, that the ABM treaty did not allow room for this interpretation ([166]). He argued that the treaty was "constructed"

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[162]: From A. Mack "Threats to the ABM treaty", op. cit.

[163]: Information 5 March 1987, p.1.

[164]: Arms Control Chronicle, Vol 19, July 1987, p.11.

[165]: Folketingets Forhandlinger 29 January 1987, pp. 6645-6655.

[166]: Information 3 March 1987 p. 3.

in such a way that everything which was not explicitly legal, was forbidden ([167]). The Foreign Minister in a direct reply to Mr. Zimmerman during the debate on 5 March 1987 in the Folketing still maintained his interpretation ([168]).

Peter Zimmerman ([169]) also argues that the value attached to the word "deploy" is crucial for the interpretation of the treaty. The wording of the treaty is just that "future deployments of early warning radars must be on the national periphery". Zimmerman argues that the official US definition of the word "deploy" as given in the February 1986 "Report on Soviet noncompliance" gives clear evidence that the modernization at Thule is not allowed :

> **"Deploy as used in Article VI of the ABM treaty means to site or locate at a particular position [this is the wording in the report] This definition of deploy apparently allows the old radar to remain. But by the same standard, the new LPAR's represents "deployments" initiated after the ratification of the treaty" ([170]).**

The Soviets have also argued along these lines in the same note to the Danish Department of Foreign Affairs as mentioned above ([171]).

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[167]: See also A. B. Carter, "Ballistic missile defense", op. cit. p. 222.

[168]: Folketingets Forhandlinger p. 8317.

[169]: ACT March 1987 p.10.

[170]: ACT March 1987, p. 10.

[171]: Information 7-8 February 1987, p. 1. The Foreign Minister, Uffe Elleman Jensen, argued during the debate on 5 March 1987 that the Soviets did not protest, but only sent a "memorandum"; Folketingets Forhandlinger p. 8336. This version is

Another point in the discussion about whether the radar is violating the ABM treaty, is two reports made before the whole controversy started. The first is the report by an expert group during the negotiations in 1971, in which it is assumed that upgrading of the radars at Thule and Fylingdale to LPAR's would not be permitted by the wording of the treaty ([172]). The then member of the National Security Council, Henry Kissinger, was chairman in a panel which "supervised" the negotiations. The expert group was reporting straight to this panel. Both groups did their work in Washington and were therefore not formally members of the ABM delegation.

The second report is the report mentioned above (chapter Three), from the US Air Force in 1980, refused the modernization on the grounds of : Costs, longer implementation time and POTENTIAL VIOLATION OF THE ABM TREATY ([173]). This is fairly good evidence that even within the armed forces there was substantial doubt as to whether a modernization would be within the spirit or letter of the ABM treaty.

One substantial question must be answered before a settlement can be reached on the radar issue; that is whether the possible violation is really a violation of the spirit or the letter of the treaty. In other words, whether the new radar does add anything significant to the US ABM capabilities. It has been

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probably the correct interpretation.

[172]: Information 5 March 1987 p. 1.

[173]: Lt Kelly Burke during testimony to Senate Committee for Appropriations 18 April 1980 pp. 1675-77.

argued above that the primary purpose of the modernization of radar was to give enhanced early warning and assessment data, and that the US SDI/ALPS project was a marginal "additional" bonus. However, the effectiveness of the installation in discriminating between decoys and warheads would diminish the military utility somewhat should the Soviets make use of countermeasures. Therefore, it can be argued that the military effectiveness of the Thule radar would not be significant in any SDI system, and thereby not constitute a violation of the Treaty's spirit.

On the US side, the push for the modernization can be argued to be a part of a greater political game. It is clear that parts of the Pentagon would like to see the constraints of the ABM treaty disappear ([174]), and the modernization in Thule (and later Fylingdale) could be used to help erode the foundation of the treaty. The constraints of the ABM treaty are especially felt to be in relation to the SDI project, and the ensuing discussion of the "broad or narrow" interpretation derives from this. Therefore, it seems important for the defenders of the narrow interpretation that the US and the USSR comes to some sort of an "modus vivendi" on the radar issue ([175]). During the "review conference" within the SCC on

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[174]: This would remove certain present constraints on the S project.

[175]: Several options lie ahead. The most likely is that the radars of both nations will be allowed to be upgraded to LPAR standard, since the military significance of this would be limited. Nevertheless, other options could be considered. Among those mentioned is that none of the radars will be allowed; instead it could be agreed that both nations could install "state of the art conventional radars". This is probably unrealistic since large resources have been invested in the constructions by both sides. More important is that it would be politically unwise for both parties to admit that they had been violating the very important treaty.

31 August 1988, the superpowers did not reach this agreement ([176]).

C.2 : Thule and arms control verification:

A last point to be briefly touched upon - that is the role of radar at Thule in monitoring USSR missile tests and therefore for the question of whether the radar serves any important role in verification of arms control treaties.

There are generally four categories or sources from which the US obtains information concerning Soviet missile tests. These are : radars, satellites, air and ship-borne sources and finally electronic intelligence.

While the old installation in the early days of its life made a significant contribution to the overall picture ([177]), new technologies soon took over. It was especially satellites, which proved more efficient in the early 70's. The old radar was only useful for data about the midcourse trajectory, and even in this area it was quite limited.

> **"Because these radars [BMEWS] provide rudimentary trajectory data, the launch point and the time of launch, they are valuable for basic verification of missile flights. But while they may be able to monitor the fact that flight tests have taken place, they are only able to differentiate crudely between the different types of missiles launched; they cannot discern qualitative improvements to existing systems" ([178]).**

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[176]: ACT October 1988 pp. 2, 25; and ACT December 1988, p.27.

[177]: F. Hussein, Adelphipaper No 165 (London 1981) p. 40-42; P. Claesson "Middelhavets Perle", appendix (Eirene, Copenhagen 1983 and Owen Wilkes in The Peace Research Center's newsletter December 1987 p. 4 (Australian National University).

[178]: F. Hussein, p.40. op. cit.

A necessary question is if the upgrading would in any way enhance the tracking capabilities in this respect, or if the other sources at present are fully capable of performing the task. A recent article by J. Richelson ([179]) in which he describes the US system for verification, the BMEWS are not mentioned at all. This is a clear illustration of the very limited role of the radar at Thule ([180]).

To sum up the chapter:

The aim of the chapter was to discuss the modernization of the radar in relation to the claims in the Danish debate concerning SDI/ALPS, ASAT warfare and implications for arms control. The major conclusions are as follows:

* It seems unlikely that the radar would constitute an important feature of the US SDI/ALPS system due to the lack of ability to discriminate between decoys and warheads. This contribution would be significantly offset by the installation's vulnerability to various Soviet countermeasures. It should be noted that in the case of a decision to activate an early deployment of ALPS, the

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[179]: Jeffrey Richelson in ACT October 1986 pp.14-19. However J. Richelson does not explicitly mention the sources for monitoring ICBM launches from Plesetsk, and SLBM launches from the White Sea north of the USSR. These tests would be within the reach of the beam from Thule.

[180]: It should not be forgotten in this connection that another system at Thule - the Satellite Control Facility (SCF) is probably important in both collection of data from satellites (ex. Jumpseat electronic intelligence satellite, KH-9 and KH-11 which plays a very important role in monitoring USSR activities) relaying data to the US, and controlling the various satellite systems. It would therefore play a valuable role in regard to arms control agreements and their verification.

possibility exists of including Thule as one of the sensors in the structure. This was clearly evidenced by information released by Lockheed in relation to the ERIS system.

** Thule would only be of marginal importance in relation to ASAT warfare. Further, the tracking of satellites and objects in space also has a stabilizing purpose/effect.

** The modernization of the installation raises serious questions in relation to the ABM treaty. It is difficult to argue that the new LPAR in itself does not constitute a deployment, and thereby violates the letter of the ABM Treaty. It is, however, not as easy to decide whether the modernization is in fact a violation of the Treaty's spirit since the capabilities in relation to SDI/ALPS systems are quite limited. This interpretation is further amplified by the claims that the USSR in fact has accepted the modernization in SCC ([181]). The superpowers have contrary to this claim not yet openly reached a "modus vivendi" on the radar issue.

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[181]: Information 7-8 February 1987.

> **In the Danish debate, there is almost no tradition for a detailed discussion of and political decisionmaking on issues of nuclear strategy. Outside the immensely limited group of experts (that is a few bureaucrats, officers and researchers) only a limited knowledge exist of strategic problems in general and nuclear strategy especially" ([182]).**

CHAPTER FIVE :

THE RADAR, THE POLITICAL DEBATE IN DENMARK AND THE SD POLICY ON NUCLEAR DETERRENCE.

In this chapter the role of the US military installations at Thule will be discussed in relation to the SD security policy and especially in relation to the position on nuclear deterrence.
The chapter starts with a general description of the radar issue in the Danish debate. Secondly, the SD policy on nuclear deterrence, SDI, arms control and the radar issue is analyzed.

A) THE POLITICAL DEBATE IN DENMARK ABOUT THE MODERNIZATION OF THE RADAR AT THULE.

First, a few comments should be made about the parliamentary conditions in Denmark during the last few years. The term "working multiparty system" is a fairly good description of the party system in Denmark. During the last two decades, there have been more than nine or ten political parties represented in the Danish Folketing at the same time. The implication of this, is

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[182]: Ib Faurby, Hans Henrik Holm and Nikolaj Petersen: "Kampen om sikkerheden" (Politica, Århus 1986) p. 42.

that it is difficult to create a government with a solid and stable majority behind it. In the area of security politics the picture has been extremely confusing for outside observers since the SD lost power in September 1982. The ruling Government (a four party minority coalition) until 1988 faced an "alternative parliamentary majority" on many defence issues. This "alternative majority" was composed by the SD ([183]), The People's Socialist Party (SF), The Left Socialists(VS) and a small defense critical party (RV). The latter party supported the Government on economic issues, while supporting the other parties in opposition on security and defense issues.

This alternative parliamentary majority had forced the Government to accept several resolutions critical of the US and NATO nuclear strategy in recent years. Among the most controversial were the Danish resistance in NATO against the "double track decision" and support of the infrastructure program economically; resistance to support of SDI programs; against first use of nuclear weapons; and the motions for talks at ministerial level about a creation of a "Nordic Nuclear Free Zone". These resolutions have often been received with skepticism by the US and other NATO allies. When the alternative majority became manifest in 1983 and then began to demand more active cooperation by the Government, which resulted in several footnotes in NATO communiques, the term "Finlandization" was in some circles changed

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[183]: The SD used to be in government for several decades with minor breaks, and has a stable representation of roughly 30 % in elections, and thereby represent a major force or influence in Danish politics.

to "Denmarkization" ([184]). In May 1988 an election was called again and resulted in the termination of the so-called alternative majority since the little defense critical party (RV) joined two of the previous partners in the former government and formed a new government ([185]).

The debate in Denmark about the modernization of the radar in Thule was a result of a series of articles in a Danish paper, Information, in the beginning of 1987. It was apparently new to the public in both Denmark and Greenland that there could be doubts about the legality of a LPAR in Thule. The debate in Denmark had not been very extensive concerning the US installations and their functions until this time ([186]). The present Danish Government was quick to issue a statement on 13 January 1987, saying that the US had given assurances in 1983 that the upgrading to a LPAR standard of the radar was consistent with the ABM treaty.

The alternative parliamentary majority was not satisfied with this statement, especially since the newspaper Information was

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[184]: E. Bjøl, "Denmark, between Scandinavia and Europe" International Affairs, Vol 7, No. 3, autumn 1986.

[185]: The three parties in the new government are RV, The Conservatives and Venstre (a party with a special following in rural areas.

[186]: In 1983, a parliamentary debate followed the publishing of the book "Middelhavets perle" by Paul Claeson (Eirene 1983) However, the debate was centred around the central claim of the book, namely that not only the radar, but also several other US facilities in Greenland, were geared into a US first strike strategy. A typical example from the debate in the Folketing is the statement by Pelle Voigt (SF):

"**[The BMEWS installation] has only got one function, namely in the situation, where you from the Western side orchestrate a surprise attack on the USSR, and where the BMEWS installation in a later phase can be used for what they are good at: very precisely to track the few Soviet missiles remaining which have survived the first strike, with the purpose of eliminating them**". Folketingets Forhandlinger 10 February 1983, p.5885.

publishing one interview after another with former US arms control negotiators, who regarded the modernization as a possible violation of the ABM treaty.

Demands were made by the alternative majority about further information and clarification of the issue. It was clear that many of the spokesmen of the opposition parties feared that the installation at Thule could be used in a future SDI or ASAT system. The term "warfighting" was not mentioned at all during the debate.

On 30 January 1987, the Government issued a statement (via the Minister for Foreign Affairs, Uffe Elleman Jensen) in which, it was argued that the controversy concerning the legality of the installation could only be solved by the contracting parties to the ABM treaty, namely the USA and USSR.

The alternative majority was not satisfied with this statement and announced a debate in the Danish Folketing on 5 March 1987. The discussion in the Folketing had a surprising outcome since the alternative majority fell apart for the first time since its inception. A resolution was accepted which consisted of 5 points:

1) **That the early warning installations at Thule cannot be used offensively.**

2) **That it cannot be used in connection with SDI or an ABM system.**

3) **That the Danish and Greenlandic authorities receive continuous information on developments relating to the Thule radar installation.**

4) **That the United States and the Soviet Union are requested to reach an agreement on interpretation problems relating to the ABM treaty concerning warning installations like the one at Thule.**

5) **That in NATO and in direct negotiations with the United States and the Soviet Union (the government urges) that the strict**

interpretation of the ABM treaty is upheld ([187]).

It was further decided that a committee (the Committee for Defense) should look into the case and report to the Folketing in due course. It seems however that the work in this committee (in regard to this specific case) has virtually stopped ([188]). It could be questioned if this act was more than simply a case of "symbolic politics" i.e. that the decision to deal with the radar issues in this Committee was merely to quiet down opposition until the main discussion was over. Later when other issues were higher on the political agenda, nobody would then raise critical questions.

B) THE SD POLICY ON NUCLEAR DETERRENCE, SDI AND ARMS CONTROL:

The purpose of this part is to analyze the SD position on nuclear deterrence and relate this to the function of the radar installation at Thule. One important limitation for the analysis has to be stated explicitly here. It is difficult to use a kind of "rational actor model", "unitary actor model" or "analytic paradigm"([189]) as a point of departure for this kind of discussion.

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[187]: Nikolaj Petersen "Denmark, Greenland and Arctic security in Kari Motola (Ed): "The Arctic challenge" (Westview Press 1988) p.17. The voting pattern was: 103 in favor of the resolution (SD, CD, V, RV, KF, KRF), 2 votes against (FRP) and the Left Socialists (VS) and the Peoples socialist Party (SF) abstained.

[188]: Information, 27 july 1987.

[189]: See for instance Graham Allison "Essence of decision" (Harvard 1981); John Steinbruner: "The cybernetic theory of decision. New dimensions of political analysis" (1974 Chapter two), Yale Ferguson and Richard Mansbach: "The elusive quest: theory and international politics" (1988 chapter six); Arild Underdahl: "Can we, in the study of international politics, do without the model of a state as a Rational Unitary Actor" in Internasjonal Politikk 1/1982 pp. 63-79.

This is of course related to for instance the sheer size of the SD party i. e. that there are different factions within the party with different goals on various issues ([190]). This is no less different on this matter of policy and the SD ([191]). In an analysis of the party's policy it would therefore be ideal if the availability of data permitted this kind of assessment - it would no doubt be an qualitative improvement. The analysis for the purpose of this paper is mainly at the unitary party level during this chapter, while the next chapter does go into more detail with the various conceptions within the SD party. The reason for this is primarily because the SD party has not been very explicit on the "nuclear deterrence issue", and secondly due to the lack of available data ([192]).

Several points could be made here in relation to the general function of the radar station and other aspects of the US/Danish bilateral relationship([193]), but the emphasis is on

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[190]: Other limitations could in the availability and processing of information; the "value integration"; and cognitive aspects can also have played a role.

[191]: see Per Voetman: "Dobbelt beslutsom" (Århus 1986); Erik Boel: "Socialdemokratiets atomvåbenpolitik 1945-88" (Akademisk Forlag 1988).

[192]: During the summer of 1988, I had interviews with several Social Democrats, but it was very difficult to get a coherent picture of the party's policy. Further, it was difficult to discern the factions in the party (since these are not formal in any way), but generally it can be said there are three factions: A) the right wing (custodians as the jargon has labelled them) which is most in line with the official NATO policy; B) The group which is increasingly skeptical towards the concept of nuclear deterrence and its function as preventing outbreak of war. C) The leftist group - mainly young parliamentarians - who do not believe in the nuclear deterrence concept.

[193]: Some of the aspects which could be discussed in more detail here if space permitted could include:
1) Danish reliance upon the US for defense of Greenland;

nuclear deterrence, SDI and arms control in this paper due to the centrality of these concepts in the discussion so far ([194]). In the previous chapters it has been shown that these issues were most central in the Danish debate and in relation to the initial modernization decision.

In relation to nuclear deterrence two aspects have to be discussed: that the radar has a warning function; and that it has a warning, assessment/characterization function i. e. for the purpose of a nuclear warfighting strategy.

The SD and most other political parties in Denmark agree that the warning function per se is an important prerequisite for

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2) Danish reliance upon the US for equipment and intelligence data;
3) whether the installation violates Danish sovereignty;
4) the relation between the modernization and the ASAT capabilities of the radar.

[194]: In a similar discussion about US installations in Australia, Desmond Ball argues that at least five points have special interest in the public debate:

1) The role of the installations in relation to enhancing deterrence and thereby global strategic stability.

2) The importance of the installations in relation to arms control agreements.

3) The probability of the installations being nuclear targets and the further implication of this.

4) whether the operation of the installations are violating (or not) the host country's sovereignty.

5) Whether the installations are compromising the development of a more independent defense and foreign policy for the host country

D. Ball, "A base for debate" p. 65. op. cit.

deterrence ([195]). The SD has argued along these lines not only at the parliamentary debate in 1987 but also in 1983 where it was stated:

> **"A part of this balance [the strategic balance] is unfortunately to continue to have the ability for what we call "second strike"... It is therefore useful with an effective warning system, and in this is included the Danish/American agreements concerning the American facilities in Greenland"([196]).**

In Chapter Three it was demonstrated that one of the reasons for the modernization was to make the installation more reliable. Therefore it seems natural to look positively at the radar in this light.

However, as mentioned before, no parties have argued that the main purpose of the modernization (to increase warfighting capabilities) could be destabilizing, by making nuclear war more likely ([197]).

In relation to the concept of "nuclear warfighting" the SD position is not quite clear. The need for "extended deterrence", which implies that the US is willing to face the USSR with nuclear weapons in the event of an aggression from the Eastern block is quite strong in many political parties in Denmark. In the SD party this perception seems to be eroded presently. Nevertheless, the

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[195]: Folketingets forhandlinger, 29 January 1987, p. 6645; 5 March 1987 pp. 8289, 8310. See also Lasse Budtz in Information 19 March 1987.

[196]: Knud Damgaard in Folketingets Forhandlinger 1o February 1983, p. 5873.

[197]: For a similar argument in relation to US bases in Australia, see A. Mack: "US bases - an ongoing debate" . Forthcoming Workingpaper from the Peace Research center, Australian National University

party has not revealed any coherent or comprehensive position on the issue of nuclear deterrence. No party program discusses the concept in any detailed way, Therefore, it is necessary to look at more general comments and statements from leading Social Democrats as well as the more general statements in the party program to analyze the SD position on this subject.

There is little doubt that SD's fundamental goal is to get away from a situation of nuclear deterrence as the way of preserving global strategic stability. The former spokesman for the party, Lasse Budtz, expressed it in this way:

> **"The Social Democrats do not believe in the-balance of terror ..." ([198]).**

On the other hand the party is saying that the terrorbalance is the way to preserve peace, at least in the near future. Knud Damgaard, former SD Minister for Defense said:

> **"It was then, and it is today the foundations of [nuclear] deterrence which is preventing war" ([199]).**

This gives the impression that the SD regards the terrorbalance (nuclear deterrence) as something necessary in the near future, while the party would like to get away from this situation in a longer time perspective.

It is more complicated to analyze which position the SD

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[198]: Folketingets Forhandlinger 3 May 1984, p. 5277.

[199]: Folketingets Forhandlinger, 10 february 1982, p. 5873.

has on the specific kind of nuclear deterrence it perceive as necessary in a shorter timespan. A number of statements, however, provide a picture of the party's position. The party has been working in the Folketing to pressure the Government to "work for an international agreement which forbids the first use of nuclear weapons" ([200]). L. Budtz put it this way:

> **"We (SD) saw also that the Danish Government works for an international ban on the first use of nuclear weapons" ([201]).**

Further, in a letter to the Danish newspaper, Information, he claimed :

> **"The Danes have several times declared, that exactly they (the Danes) do not wish to be counted amongst those who would like to be defended by nuclear weapons" ([202]).**

These two statements indicate a negative attitude towards the official NATO strategy of "flexible response": the SD view more resembles a belief in "assured destruction" as discussed in Chapter Two. On the question of nuclear warfighting, the party has not directly come forward with an explicit position. The latest party program (1983) on security issues does however discuss these issues in a fairly general way. In the program it is argued:

> **"that any talk about limited nuclear war is both meaningless - and dangerous" ,**

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[200]: Resolution accepted in the Folketing on 3 May 1984.

[201]: Folketingets Forhandlinger, 3 May 1984 p. 5278.

[202]: Information 27 July 1988.

and

> "A limited nuclear war would ..... become a global nuclear war" ([203]).

These two last statements again indicate that the SD does not believe in nuclear warfighting strategies and further regards them as potentially undermining the global strategic stability. Further, the present SD spokesman on defense matters (Hans Hækkerup), said during a recent debate in the Folketing that:

> "For us Social Democrats, the goal is to get all short range nuclear weapons removed from European soil. We want to have the third "zero". For us the combination of short range nuclear weapons and the NATO doctrines concerning forward defense and first use of nuclear weapons is a "suicide-cocktail". ([204]).

This clearly shows the critical view in the SD towards the NATO strategy of flexible response or warfighting. The change within the SD party has also been noted by Nikolaj Petersen from Department of Political Science at University of Århus, Denmark who argues in a recent article:

> "This basic low-key, but acquiescent attitude to nuclear weapons is no longer characteristic of the Danish Social Democrats. Without explicitly rejecting flexible response, their doubts and concerns with respect to the role of nuclear weapons in NATO's strategy have multiplied to a point where they are, in effect, no longer adherents of NATO's strategy on this important

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[203]: SD party program on "Om sikkerhedspolitik og total forsvar". (1983).

[204]: Folketingets Forhandlinger 13 March 1989, p. 7854.

issue"([205]). (emphasis added)

The SD perception of nuclear deterrence probably has a foundation in a significantly different threat assessment (of the USSR and Eastern bloc) than for instance the official NATO and US perception.

N. Petersen and I. Faurby in a conference paper used the distinction between "deterrence" and "reassurance"([206]) as the two guidelines for a country's security policy:

> **"Stated in very general terms it could be said that the main theme of the country's [Denmark's] security policy debate is what two elements - deterrence and reassurance- specifically should consist of and how they should be balanced against each other" ([207]).**

This distinction is also useful in an analysis of the SD party's position. In this chapter it is useful to emphasize that the new trend within the SD party has moved the position where the

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[205]: Nikolaj Petersen: "Security policies of small NATO countries" in Cooperation and Conflict, XXIII, 1988, p. 149.

[206]: For a very good presentation of these two concepts, see Michael Howard: "Reassurance and deterrence: Western defense in the 1980's" in Foreign Affairs V. 61.2 (1982) pp. 309-24. This distinction can also be translated to a different context, namely the objectives of the Harmel Report i. e. the goals of the NATO alliance. The report stress both political goals (reassurance) and military (deterrence) goals. In the discussion of the NATO strategy, a cleavage can be found in the relative value or importance countries attach to these two elements.
Glenn H. Snyder: "The security dilemma in alliance politics" in World Politics, V. 7,4 (Spring 1985), pp.3-41 discusses two parallel concepts (but within alliances): "Entrapment" and "Abandonment". The discussion in this paper could go even further and apply this pair of concepts, but the limits of space do not allow this. See also Robert Jervis: "Cooperation under the security dilemma", in World Politics 30 (January 1978), pp. 167-214.

[207]: I. Faurby and N. Petersen: "The far north in Danish security policy". (Institute of political science, University of Århus, 1988), p.13.

reassurance aspect is now somewhat stronger than the deterrence aspect ([208]). The US nuclear strategy of warfighting emphasizes the opposite. Here the deterrence element is significantly stronger than the reassurance element.

On the question of SDI, the SD has expressed its position more clearly than on nuclear deterrence. This has been achieved through parliamentary debates and in statements in newspapers etc. It is clear that the SD is very concerned with regard to the US administration's plans in relation to the SDI/ALPS project. Lasse Budtz summed up the SD position during a parliamentary debate in 1986:

> **"The position of the SD is clear: we will continue to work for... a no to first use [of nuclear weapons]. We are against the SDI program and other star wars programs. we will work against a violation of the ABM treaty...."** ([209])

After the Debate in the Folketing in March 1987 the SD spokesman on security policy issues, Lasse Budtz, and the spokesmen from other parties (R and SF) sent a note to the US Congress([210]) to underline the content of the resolution accepted in the Folketing in March 1987. The aim was to make sure that it was known

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[208]: Petersen and Faurby, op. cit. comes to this conclusion: "To put it simply, the SD traditionally have emphasized the reassurance aspect of security policy somewhat stronger than the large bourgeois parties [Venstre and the Conservatives]", p. 27.

[209]: Lasse Budtz, quoted in "Dansk Udenrigspolitisk Årbog" Edited by Nikolaj Petersen and Christian Thune (Copenhagen 1987) p.240.

[210]: The letter was sent to Les Aspin, the Democrat who is chairman of the Armed Services Committee in the House of Representatives and to the Democrat Sam Nunn who is leader of the Armed Services Committee in the Senate. Information 19-20 March 1987.

in Washington that the resolution stipulates that the Thule radar is not to be used in relation to a future SDI system([211]).

In relation to arms control and here especially the ABM TREATY, there has been widespread disagreement in the Folketing about the implications of the modernizations as shown in the previous chapter. The Danish Government reassured the Folketing that the modernization was in agreement with the ABM treaty ([212]). However, the resolution (written by the SD) which was accepted in the end, stipulated that the Danish Parliament preferred a restrictive interpretation of the ABM treaty, and in this way put certain pressure on the US. It was at the same time accepted that the superpowers had the final decision, and in this way direct pressure on the US was not applied. This could have been done by accepting a resolution stating that the radar (after the modernization) could not be used until an agreement between the US and the USSR was reached. The Social Democrats held a fairly low profile during the debate which was dominated by the two left wing parties (The Left Socialists and The Peoples Socialist Party) and the Foreign Minister. During a conversation with Mr Lasse Budtz on 1 August 1988, he assured me that he did believe that the modernization did constitute a violation of the ABM treaty. Several people who were present at the SD parliamentary group meeting (where the decision was taken on how to act in the radar issue) the

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[211]: It should again be said that the type of SDI as presently considered would probably not be destabilizing in itself. One can on the other side, argue that the process early deployment would start, could be highly destabilizing. It could very likely make void the ABM treaty, and possibly start a totally new arms race.

[212]: Folketingets Forhandlinger 29 january 1987, pp. 6645-47, and also 5 March 1987 pp. 8289,8310-11.

morning before the debate in the Folketing, have told me that Lasse Budtz and several other more critical Social Democrats were told "how to vote or not show up in the Folketing". In fact, the speech which Lasse Budtz did make in the Folketing the day after was not written by himself, but by Mr Svend Auken!!! The next chapter discusses this cleavage within the SD in more detail than here, where it is sufficient to state that there was some disagreement within the party as to what position to take during the parliamentary debate.

To Sum Up The Chapter:

The chapter has analyzed the SD position on nuclear deterrence and concluded that it resembles an "assured destruction" conception as discussed in chapter two. On this basis there is clearly a cleavage between the general SD position on nuclear deterrence and the position on the radar issue.

Further, it was shown that the SD party is against the SDI project and clearly expressed concerns in relation to the potential use of Thule in a US SDI architecture.

Finally, it was argued that the SD position on the radar issue was not quite in accordance with the party's policy on arms control - in particular, the ABM treaty. This was due to the modernizations implication in relation to the ABM treaty. In the former chapter it was argued that the modernization was a quite clear violation of the treaty's letter, while it is more doubtful whether it is also a violation of the treaty's spirit. It was argued that there were different positions within the party as to

this subject.

In this thesis it is interesting to look at the Danish SD reactions in relation to the background for the modernization, and ask which factors can explain the formulation (or lack of formulation) of the policy. On a number of related issues the SD has been very recalcitrant, but on the radar issue, the party seemed to be rather accommodating. The next chapter seek to analyze this apparent contradiction.

"The historian.....continuously asks the question 'why',and as long as he hopes for an answer, he cannot rest" ([213]).

CHAPTER SIX:

ANALYSIS OF THE SD POLICY ON THE RADAR ISSUE.

If the SD is critical towards the strategy of nuclear warfighting , SDI and against any violation of the ABM Treaty, a logical conclusion must be that the modernization of Thule is contradictory to their policy aims. However, there are other interests that the SD will have to accommodate when considering their policy stand on the "radar issue". Among these are other aspects of Danish security, the bilateral relationship between Denmark and Greenland, the reactions from alliance partners and implications for future political constellations in the Folketing. Therefore it is crucial to take these points into consideration when analyzing the SD position on the US installations in Greenland.

To answer the question of the Danish SD policy stance on the US facility in Thule, it is therefore necessary to conduct the inquiry at different levels of explanation ([214]).

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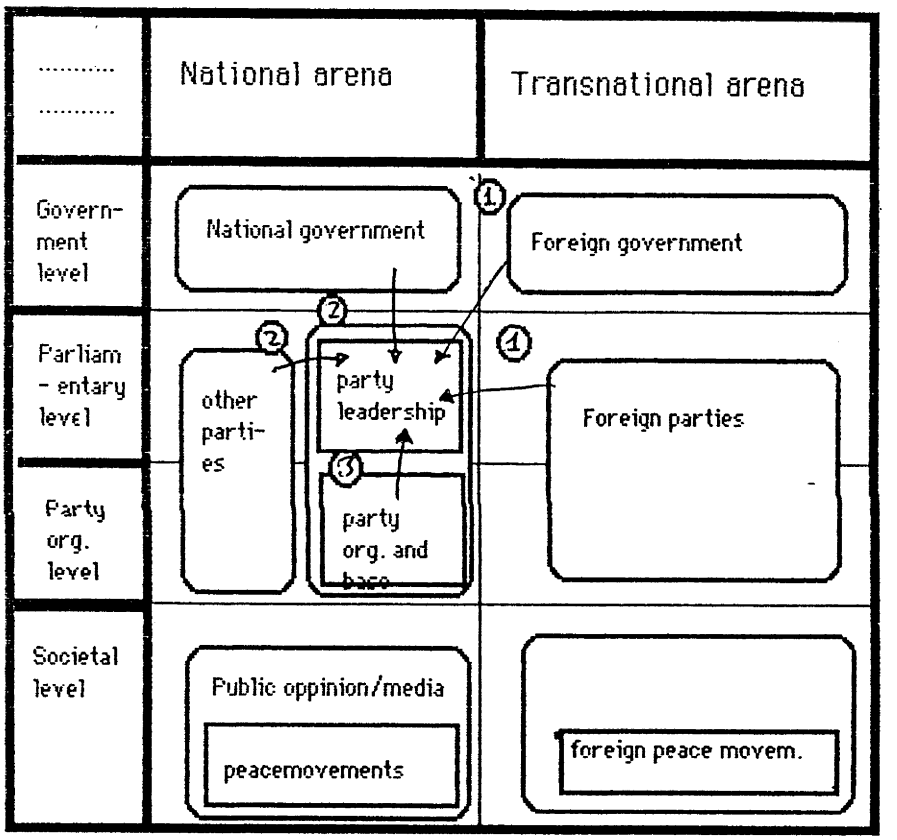
[213]: E. H. Carr: "What is history" (Penguin Books 1964), p. 87.

[214]: These levels are taken from an article by M. Krasner and Nikolaj Petersen, Journal of Peace Research, June 1986 pp.155-73. The term "level of explanation" as used in this part, should not indicate any causal relationship. The term "level of actors" could

Figure 9 illustrates the framework for the following discussion:

Figure 9: Influence paths with respect to the formulation of policies for Danish political parties" ([215]).



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also be used here. The main purpose behind the framework is to have a guidance for the analysis.

[215]: Petersen and Krasner, op. cit. p. 164.

It will be argued that four main paths of influence were the main factors behind the SD position on the Thule case and the security policy on this issue.

Firstly, there is the **transnational or international level**, which is illustrated by arrows no. 1.

Secondly, there is the relationship (**interparty level**) between the SD and other political parties in the Folketing. Arrows no. 2 shows this influence path.

Thirdly, there is the **intra party level**. Arrow no. 3 show this relationship.

The framework does not deal with the relationship between Greenland and Denmark. This was certainly an important aspect in the decisionmaking process and will therefore have to be dealt with below as the fourth influence path.

The following discussion does leave out the rest of the influence paths illustrated by the model. These are regarded as of marginal importance, and the scope of this thesis does not leave space for a discussion of these factors ([216]). The relative weight of the four main influence paths will be discussed in the final

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[216]: Some examples of these other influence paths could be:
* The peace movement in both Denmark and other countries. It was quite clear that the Danish peace movement was not very active at all when the discussion surfaced in 1983 and 1987. I have only been able to find one letter to a newspaper (Information) which showed that the peace movement was aware of this issue !!
* Public opinion: here the same was the case; very few people outside the so called security establishment showed any interest in the case.
* Even though there are Danish economic interest connected to the modernization of the radar (contracts for construction etc), no information show that the SD was influenced by this fact.

part of the paper.

A) **The external or international level:**

The bilateral relationship between Denmark and the US is unique in many ways. The defense of Greenland is almost exclusively left to the US, even though it is a part of the Danish Realm ([217]). This is clearly so since Denmark has not got the defense resources necessary for the appropriate defense. It is, therefore obviously clear that the defense of Greenland is a serious problem facing every Danish administration, and that the present structure of the international system and the geography of Greenland does not leave much leverage for finding other potential external allies. Another argument could be that the US perceives ([218]) Greenland as a part of its sphere of influence, and thereby attains this influence via upholding the defense of the island. Another way of securing the influence over the large island is by giving special trade concessions to the Greenlandic people ([219]), or by providing special services to the Greenlanders ([220]).

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[217]: N. Petersen, "Denmark, Greenland and Arctic security p.2 op. cit.

[218]: The Monroe doctrine, see the Greenlandic peace movement perception of this aspect in "I demokratiets navn" by Jens Thoft, Henrik Zahle, Baltser Andersen and Klaus Birkholm (Egtved 1987 Denmark). pp.23-24.

[219]: This is actually the case in certain situations. In late 1986, the Greenlandic people acquired customsfree access to the US market without any special conditions. Further, it has been questioned whether there was any external (read US) influence in the negotiations after Greenland decided to leave the EEC. The Greenlanders achieved quite favorable conditions.

[220]: The US military provides a long range of services for the Greenlanders. Among these are: The airport at Sdr Stromfjord, emergency assistance both on the inland ice and at sea, and the monetary inflow into Greenland as a result of the US bases.

Secondly, there is the direct Danish dependence upon the US is in relation to security issues for the defense of Denmark proper. In security matters there is of course the reliance upon the US strategic arsenal as a final deterrent against a potential USSR attack or blackmailing ([221]). The Danish membership of the NATO alliance in 1949 came about against a background of fears regarding expansionist USSR moves. The defense of Denmark proper is clearly the major and preeminent problem facing decisionmakers due to the geostrategic location and importance of Denmark as "the cork in the Baltic".

Thirdly, there are also other areas where the SD could perceive Denmark as dependent upon the US, for instance the reliance upon the US especially for intelligence, equipment and training of the Danish defence forces.

Fourthly, there is the area of trade, where a more recalcitrant SD and Danish position towards the US installation at Thule could have a "spill over effect" on the trade between the two countries. Fear of economic sanctions and technical trade barriers comes to mind here.

A fifth, and more sophisticated argument to explain the position of the SD Party's behavior in this area is, that if the US alliance partners start to question US installations function in the US strategy openly, then this could indicate serious disagreement within the alliance and thereby weaken the credibility of the whole NATO structure. This could in a longer term perspective

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[221]: For a good description of the difficult geostrategic position of Denmark, see "Soviet strategist target Denmark" in International Defense Review, Vol 19 No. 8 1986, by C. N. Donelly and P. A. Petersen; DE September 1986 pp 132-35.

mean a threat to the global strategic stability, if the Soviets tried to take advantage of this position of "declining Western resolve" ([222]).

A sixth point is that the Danish SD work closely together with the Norwegian Labor Party and other Western SD parties in the Scandilux group on these issues. It can therefore be argued, that the Danish SD would be reluctant to change their policy until a common stand was reached with the members of the Scandilux group and especially the other SD party in Norway ([223]). On other aspects of the SD security policy there has been a tendency to "clear" critical issues within the Scandilux group before a final position has been reached. The SD position on the double track decision is a good example of this decision making process ([224]).

The last factor of importance is the fact that the base is already there, and the SD decisionmakers perhaps feel that it rather limits the demands they can make on the US. The fact that the US actually defend the island means that Denmark is very vulnerable if this ceases to be the case. Denmarks meagre defense resources makes this virtually impossible. It is not easy to assess the SD position on this aspect, due to the fact that none of the information available for the thesis point explicitly in this

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[222]: See A. Mack for a similar argument concerning the US bases in Australia: "US bases - an ongoing controversy" op. cit.

[223]: See Nikolaj Petersen: "Scandilux og Danmark" in "Man har et standpunkt..." edited by Søren Møller Christensen (Eirene 1984 pp. 64-81.; and Per Voetman, op cit, pp. 62-66, 84.

[224]: Nikolaj Petersen argues that the Scandilux work has importance in relation to : information gathering; political analysis; and the presentation of policy options, op. cit p.73.

direction. If conversations between SD policymakers and for instance US embassy staff and other of the US administrations officials were revealed, perhaps the explanatory power of this argument could be decided ([225]).

To sum up the analysis, the SD reluctance to openly critizise the US installation at Thule can therefore be explained by 7 conditions at the international level:

The Danish reliance and dependency upon the US in relation to

* the defense of Greenland,
* "the nuclear umbrella" and conventional support for the defense of Denmark proper ([226]).
* the need for US military equipment, training and intelligence([227]).

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[225]: Svend Auken (the present leader of the SD and the leading person in the creation of the party's position on the radar issue in 1987) has had several contacts with staff at the US Danish embassy, and has been invited to the US by the US administration on several occasions. The content of the conversations could of could be interesting in this connection.

[226]: It is further likely that a Danish position which severely questioned the US engagement in Greenland also could have serious implications in relation to the other NATO allies. On other occations, the British have argued that since the Danish contribution to NATO's defense efforts is relatively small, it would perhaps reconsider its engagement in relation to the agreements on how to help defend Denmark with support from British conventional forces.

[227]: In relation to the Danish reliance upon the US in relation to intelligence, it could be argued that the US and the NATO partners are also reliant upon Denmark for collection of intelligence about especially the Warsaw Pact countries close to the Baltic Sea. In case Denmark was cut off from intelligence cooperation with the US, it could also be possible to obtain the relevant data from other sources. Intelligence sharing is probably often taken place especially on a bilateral basis, and the best sources for intelligence with special interest for Denmark would be Sweden, Norway and West Germany. It would certainly still be possible to obtain the necessary data from Sweden and one can probably assume that the cooperation in the intelligence field would continue between Denmark and Norway

* trade.
* the lack of coordination with other SD parties in Western Europe.
* the fact that the base is already there and that the US uphold the defense of the island.
* the "declining resolve" argument.

B) The second level of analysis is the **internal level.**

Here, the parliamentary political (interparty) level in Denmark is important. When the discussion about the capabilities of the modernized radar took place in early 1987, the Government had several times indicated that there were limits for what it could accept in defence and security policy matters in terms of resolutions etc from the alternative majority. The underlying threat was that in case something "really unacceptable" came up the Prime Minister, Poul Schluter, would call an early election ([228]). There was therefore a great deal of speculation concerning tactical moves around this aspect, since the SD had learned that it would not be very favorable for them to have an election campaign, where the

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/ West Germany since data from Denmark would be of equally high importance for these nations. It is difficult to see how the U should be of special importance in this relation. Dependence upon specific intelligence cooperation can also be a disadvantage. D. Ball argues that an intelligence relationship which is not geared into the specific purposes of both (or all) parties can lead to distortions of defense postures and foreign policies for the smaller countries ("The ties that bind" Sydney 1985 p. 304.). In the same way, a reliance upon an ally, can be detrimental in relation to both equipment and training.

[228]: He did in fact call an election on a security policy issue in May 1988!

main theme was security politics ([229]). A resolution with serious criticism of the modernization, or even a prohibition of using the modernized (new) radar before agreement was reached between the US and the USSR, could have this effect. So could a demand for an independent commission to investigate the matter; this idea was brought forward during the debate. In addition to this problem, it could be difficult for the SD to withstand criticism from the right wing parties, concerning the Danish credibility within NATO. This could have serious implications in later elections, since the majority of the SD voters are firm NATO supporters ([230]). It can also be argued that if the SD wanted to keep doors open for later cooperation with parties in the Folketing, a strong criticism of the US could make these opportunities less likely. It was therefore easier to accept the middle road and avoid serious conflicts in the Folketing ([231]).

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[229]: The discussions about the double track decision had not led to any success for the SD a few years earlier, and Social Democratic parties in Europe had experienced the same.

[230]: Krasner and Petersen, p. 170. op. cit

[231]: Auken had earlier sought to establish a broad majority or consensus on the Danish security policy by the proposal to establish a commission (under the Department of Foreign Affairs) to lay the analytical groundwork for a more common position between the SD, RV and the Government.

The little defense critical party (RV), which was crucial for the support of the Governments economic policies, was in a similar situation. It had todecide which issue was of the greatest importance: to continue to support the minority coalition on economic policies and at the same time vote for a milder resolution, or break off the cooperation with the coalition Government and vote for a more strongly worded resolution as suggested by the two leftist socialist parties. Both RV and the SD chose the middle ground and joined the Government in the resolution accepted on 5 March 1987.

C) Thirdly, there is the **intra political level.**

In this regard it is especially relevant to look at the personal battles within the SD Party concerning who should become the successor after the expected resignation of the Chairman, Anker Jorgensen, and also the fear of creating deep cleavages within the party. The radar issue could prove to be the test case for determinating how far the SD would go in its formulation of the security policy. In other words, which faction could win support for its views.

Before the controversy around the radar issue erupted, there had been a vigorous debate about the future of the party's security and defence policies. The rightist parts of the party had resisted many of the official policy recommendations, and in certain instances members of the Folketing had crossed the floor and thereby broken the party discipline. In the attempts to secure support from as many parts of the party as possible, Svend Auken (who was tipped to become the new leader of the SD party - and also became leader) had to accept hard compromises with the right wing faction of the party ([232]). If these considerations were already taking place in the beginning of 1987, this could have affected the SD Partys standpoint in the debate in March 1987. Auken was at this time political spokesman for the parliamentary group ([233]), and thereby able to heavily influence the final decision to go down the middle road. During the meeting in the parliamentary group (where the SD

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[232]: It should here be noted that the majority of SD voters is overwhelmingly NATO positive - in polls the SD voters typically score around 2:1 margin in favor of NATO membership. Krasner and Petersen, p.170. op. cit.

[233]: This is probably the most important task, apart from being leader of the party itself.

position was clarified before the debate in the Folketing the same day) Auken was the leading person ([234]). The left wing faction of the party had been the most active in the newspaper debate leading up to the 5 March parliamentary debate ([235]).It seems that there were different opinions between Mr. Budtz and Mr. Auken on security issues. There has since been renewed controversy between the two people, which (perhaps) resulted in the voluntary exit of mr. Budtz from the Folketing in 1988. Several political observers saw this step as a direct protest against Mr. Auken.

D) Finally, but also at the **internal level**, is the relationship between Greenland and Denmark. This part of the discussion is mainly centred around the fragility of the ties between these two people.

When the Homerule was established in 1979, there was a great deal of discussion about one particular aspect: the rights to the revenues of the minerals in the Greenlandic subsoil. From the Greenlandic side it was first argued that the rights should belong to the Greenlanders only, while the present Danish Prime Minister (Anker Jorgensen) clearly said that if this was the case, there was

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[234]: Some participants to the meeting have later indicated that he tried to "bully through" his own point of view. This was tried by stating that there was nothing controversial in the modernization etc. When the leftist members of the SD parliamentary group (Lasse Budtz and Jytte Hilden) argued that this was not the case, they were told that "either they followed the party line or did not show up in the Folketing". Certainly Auken had the advantage of being quite well informed on the issue as was Lasse Budtz.

[235]: Information 5 March 1987: here Jytte Hilden stated that the Thule issue was more important than the previous resolutions in the Folketing accepted by the alternative majority. Concerns were also expressed by DSU (the SD youth organization) and AIC (Arbejderbevægelsens Internationale Center) on the modernization decision.

no need to talk about a Greenlandic Homerule under the Danish realm. In other words, if this was what the Greenlanders wanted, they would have to create their own independent nation, and in this way become fully independent of Denmark ([236]). The parties agreed on a loosely worked out scheme, the main part or principle being that both people have the rights to the revenues in case this becomes relevant.

From this it becomes clear that one of the Danish reasons for continued involvement in Greenland is probably partly related to the hope of getting some economic gain in the future when it becomes viable to extract the various minerals. In addition to this, as mentioned briefly in the introduction, there is the question of whether the US bases in Greenland are the single most important Danish contribution to the Western alliance. If this is the case, it seems like the low defense budget is partly a consequence of this condition. Other things being equal, if the US installations were not in Greenland and (or) Greenland not a part of the Danish Kingdom, the Danish defense expenditures would have to be significantly higher to match other countries in the alliance. To host US military installations can in this perspective be regarded as quid pro quo for not building up conventional forces in Denmark. Finally, the SD was in government while the US bases were established in Greenland. It would therefore be awkward for the SD to suddenly argue that the US installations functions were detrimental to both Greenlandic and Danish interests. This would certainly undermine the credibility of the SD party in the eyes of

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[236]: There is within the Greenlandic society, especially on the far left wing, sometime expressed a wish to become fully independent of Denmark.

the Greenlandic people ([237]).

On the basis of this it seems that the SD has an interest in not politizising the issue of US military installations in Greenland, because the consequences could be detrimental to perceived general Danish and SD interests.

To sum up the chapter:

The discussion in the Folketing in relation to the US radar at Thule did not focus on the capabilities of the radar in relation to the US strategy of "nuclear warfighting". This could be seen as quite surprising especially when considering that the alternative parliamentary majority had critizised many other aspect of the NATO strategy : "deep strike", first use, and deployment of Pershing and Cruise missiles. The background for the SD position could be found in various factors. At the international level, Denmark is clearly dependent upon the US for the defense of Greenland. In relation to the perception of the dependency of Denmark upon the US for the defense of Denmark proper, there seems to be changes under way. However, there seems still to be a firm belief that the US nuclear umbrella and conventional support are

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[237]: The little Greenlandic party IA has on several occasions argued that the Greenlandic people have too little insight in the US activity in Greenland, and that the Danish authorities do not provide sufficient information on the issue. Demands have been made for the creation of a "base-commission" which should look in to the matter of US installations in Greenland. The ruling Siumut party has taken a more pragmatic stand on this issue. The leader J. Motzfeldt stated: The USA security is also our security" Berlingske Tidende 10 March 1985 and has after the radar controversy agreed in a statement with the Foreign Minister, Uffe Ellemann Jensen that the radar only has a defensive purpose and has a great importance for the defense of the Western alliance , Dansk Udenrigspolitisk Årbog 1987 edited by Nikolaj Petersen and Christian Thune (Copenhagen 1988), p. 183.

needed for the defense of Denmark. It has also been argued that the reason for the SD stand should be found in a perceived dependence upon the US for intelligence, equipment and training of Danish forces. Another important factor at the international level is the cooperation between the Western SD parties in the Scandilux group. Usually the Danish SD clarifies its position in the group before a final position is reached on controversial issues. The radar issue was not discussed within this group, and this perhaps was an important factor in the SD "non-decision making" on the issue. The fact that the base is there and the limitations for the SD was also put forward as a contributing factor. Finally the "declining resolve argument" was presented, i.e. that the SD did not critizise the US installation openly due to the implications it could have on the relationship between the two major blocs.

At the internal level, three factors could have influenced the SD position. Firstly the potentially fragile political relationship between Denmark and Greenland. A politization of the role of the US bases could disrupt the relationship between Copenhagen and Godthaab ([238]). Secondly, tactical considerations in the Danish Folketing could have influenced the voting and the discussions in the debate. Finally there is the intra party level. The need for the new chairman Svend Auken to keep all fractions of the party behind him for the later battle for a leadership position can also have had significant influence in the policy formation process.

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[238]: The capital of Greenland

"The search for causalities in history is impossible without reference to values ... Behind the search for causalities there lies, directly or indirectly, the search for values" (Meinecke [239]).

CHAPTER SEVEN:

CONCLUSION:

The US BMEWS radar at Thule, Greenland has been operational for nearly three decades now. The installation has not been the subject of much political debate or research in Denmark during this period. The reasons for this are complex, but one of the important factors is the radar's geographical location, which is very far away from the political/economical centre of Denmark, and therefore not seen as significant in the Danish debate concerning security issues. Secondly, the fairly technical nature of the subject has been hampering any real discussion about the capabilities and the functions of the installation. The discussions concerning the radar have therefore had a tendency to go astray and been riddled with speculations and sometimes contradictory assertations. Thirdly, there has probably been a certain hesitation among many political parties to go into any detailed debate about the nature of the US engagement in Greenland due to the fear of

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[239]: "Kausalitaten und Werte in der Geschichte" translated in F. Stern: "Varieties of history" (1957), pp. 268,273.

politizising the US installation and in this way maybe indirectly critizising the US activities. Finally, the implication for Danish/Greenlandic cooperation, which has had certain fragile tendencies, might also become politizised had a debate concerning the relevance of the base surfaced. On this basis, it seems that most political parties had a clear interest in not going into any detailed discussions concerning the nature of the US base in Greenland.

The purpose of this paper was twofold. Firstly, to describe the installation, its functions, the modernization, place in the US warning system and role in relation to the present developments in the US strategic policy (research questions one to four). The second purpose was to analyze the Danish SD position on this specific subject (research questions five and six).

In the Second chapter, it was demonstrated that tactical warning is essential in the nuclear age. Without effective and reliable warning systems it is difficult to argue that the concept of "nuclear deterrence" is credible. The chapter presented different conceptions of nuclear deterrence (assured destruction, warfighting and warwinning) and showed that one of the preconditions for more elaborate nuclear options is related to the demands on the C3I systems.

The Third chapter, discussed the role of the Thule radar in the warning system, and concluded that the main role of Thule is tactical warning and assessment of Soviet ICBM's, and SLBM's launched from the Arctic region. In the case of launching of ICBM's, Thule would perform the role of confirming attack and

providing data on attack characterization and assessment. The modernization during 1986-87, had as its basic rationale a desire to enhance capabilities for further attack characterization and assessment, with the further purpose of enhancing the credibility of the US warfighting nuclear strategy. This was clearly expressed during testimony to the US Congress. Without the data that the installation at Thule and other ballistic missile warning sensors are supposed to help provide, it would be difficult to argue along these lines, i.e. that a nuclear warfighting strategy is possible or credible. On the basis of these findings, it was concluded that the initial decision to modernize the installation was to enhance nuclear warfighting capabilities.

The radar also has certain space tracking capabilities and is therefore of marginal use if the US should proceed with the development of an ASAT system. However, the radar's spacetracking capability is also of some use in relation to identification of space debris which reenter the atmosphere, and thereby also has clearly stabilizing purposes.

Chapter Four showed that Thule would not be able to perform any significant function in a SDI system intended to protect population. However, the debate is no longer centred around the system for population protection since this is generally considered to be both technically and economically impossible. In relation to the more feasible research in the areas of either a more limited SDI project or an ALPS (for protection of hard targets, strategic forces etc), it was argued that Thule is currently considered as one of the sensors for a near future deployment (ALPS). The chapter did however emphasize the present shortcomings of such a system.

The most serious criticism with respect to these systems potential is that it can easily be jammed or spoofed, and the lack of discrimination between decoys and real warheads. For the Soviets these countermeasures would both be cheap and simple.

The discussions in the Danish Folketing concentrated a great deal of its effort around the question of Thule, the ABM treaty and arms control. In chapter Four, it was argued that the modernization of Thule is a violation of the treaty's letter for several reasons. In this relation it was emphasized that "grey areas" often provide difficult and substantial problems in relation to the interpretation of arms control treaties. The modernization of Thule is no different in this respect. However, there are also several points, which indicate that the modernization went beyond the wording of the treaty. Firstly, the modernization means that the radar has a tremendous new potential. Secondly, in fact, the modernization is not just a modernization - or upgrade of the existing radar - but a "deployment" of a new system. This is essential as to the treaty's wording explicitly forbids the contracting nations to deploy LPAR's except along the periphery of their national borders. The crucial question in the process of reaching an understanding on the radar issue and the ABM Treaty is related to whether the modernization is just a violation of the treaty's letter or if the upgrading to LPAR standard in fact constitute a violation of the treaty's spirit. The conclusion in chapter Four held that the upgrading is a rather clear abuse of the treaty's letter, while it is far from certain that this is the case in relation to the spirit/purpose. It is doubtful if the new LPAR does add any significant capabilities to a US ABM system. The

Soviet countermeasures would still be cheap and simple.

The last point in relation to the arms control issue was whether the radar plays any positive role in monitoring arms control agreements etc. It was argued that initially, the radar performed some functions in the US network for monitoring USSR missile tests. However, it seems that this role has decreased significantly primarily due to the fact that more sophisticated systems have appeared in the last decade. It can on this basis be concluded that the question of whether the upgrading is in accordance with the ABM treaty is the main question. In other words, if one interprets the upgrading as detrimental to the arms control process, there are no positive spin-offs in relation to other areas of arms control.

The second objective of this paper was to analyze the Danish SD policy on nuclear deterrence, SDI and arms control (ABM treaty) in relation to the US installation at Thule. This was done by comparing with other security policy aspects of the SD party platform. The most striking feature of the analysis was that the SD does not have any explicit, coherent or consistent policy on the concept of nuclear deterrence. The party has not at any time released any comprehensive information concerning its stand on the question of nuclear deterrence. As many observers have put it: "They just simply have not thought this through, but are working on some sort of incremental basis in questions which deals with this aspect - there is just simply no basic framework" ([240]). The party's

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[240]: After my return to Denmark in June 1988, I had several conversations with people who are generally regarded as belonging to the "elite/establishment" in the issue area of security policies as well as present and former SD spokesmen in this area. Erik Boel notes in his book on the SD nuclear weapons policy that: "The pattern

stand on nuclear deterrence was therefore analyzed on the basic and very general comments as made in the party's last program and by former spokesmen ([241]) for the party. Due to the lack of specific information from the party the conclusions tend to be of a somewhat tentative nature.

Nevertheless, it was clear that the party was directly opposed to the use of the radar in relation to any ABM or SDI project. The SD resolution, which was accepted in the Folketing in March 1987, clearly said this. The plans for either a first phase SDI or a ALPS with the present available technology, i. e. the ERIS/HEDI system as suggested by Lockheed and McDonnel Douglas, would clearly be in direct opposition to the party's policy. Presently, the party seems to take a fairly pragmatic stand on this issue, and apparently wants to wait for new initiatives or decisions from the new Bush administration before making (further) moves in this area. If any concrete steps are to be taken by the new US administration, which could lead to the use of Thule in relation to one of these systems, it would be interesting to see which initiatives the Social Democrats might take.

In relation to the radar's integration in the US nuclear strategy of warfighting, the SD has not voiced any concern. A very substantial assumption here (for the later analysis) was that the SD policymakers were fully aware of this connection between the

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for the party's decision making has some times been: two steps forwards and then one back. [The SD] has navigated from case to case; any long term strategy is it difficult to see, but the fundamental tendency is visible" op. cit. p. 16.

[241]: The SD has now a new (Hans Hækkerup) and fairly inexperienced spokesman on security issues. Lasse Budtz left the Folketing in 1988.

radar modernization and warfighting capabilities ([242]).

In chapter Five, it was shown that the party is opposed to any talk of limited nuclear war, which it regarded as both meaningless and dangerous. At the same time it was expressed that a general belief in the party was that a limited nuclear war would become a global nuclear war. In other words a rather critical stand on the issue of nuclear warfighting was adapted without explicitly saying that this US strategy could be destabilizing. Add to this the resolutions in the Folketing concerning the abandonment of first use as an allied strategy and the talks about creating a Nordic Nuclear Free Zone. Moreover, previous chapters have shown that the initial modernization of the radar had the rationale of providing information on the character of a USSR ballistic missile attack to assessing the impact of various strikes, thus permitting more informed and selected responses. This attack characterization and assessment capability is critical to the success of any warfighting strategy ([243]).

On this basis, there seems to be a lack of coherency or perhaps even a contradiction in the SD policy and this will have to be explained by a number of other factors.

At the parliamentary level, one of the main reasons for the party's hesitations on the issue of US installation in Greenland can probably be linked to the tactical considerations for future political cooperations with other parties in the Folketing. The SD

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[242]: During my conversations with the SD politicians, none of these indicated that they were unaware of this relationship between the modernization and the US nuclear strategy. Whether this is due to the "bluff" of the interviewee's or not is impossible to decide.

[243]: D. Ball, "A base for debate", p. 88, op. cit.

was aware of the risks involved in a further politization of the issue. In recent years, a politization of security issues in Danish politics has also had a tendency to lead to a polarization. Such a polarization could very easily be detrimental to the party's other political objectives. In other words, the priority of the radar case was not high enough on the SD political agenda to risk a major confrontation. Such a confrontation could also lead to a general election, which the SD certainly did not want on this issue.

At the international level, a further critical stand on the radar case would also provide the party with substantial problems in the relationship with NATO and the US. If the Folketing did oppose the modernization on the grounds that it would enhance nuclear warfighting capabilities, it would be far more serious than the resolutions passed in the Folketing during the last six years. The potential reactions from the alliance partners would no doubt have influenced the SD stand on the issue. To complicate the matter further Denmark is almost entirely dependent upon the US for the defense of Greenland due to its meagre defense resources. At the same time, it is perhaps not wrong to point to the perception within Denmark about the lack of influence upon the US nuclear strategy. Especially within the SD there is an understanding of the need to work in cooperation with other countries if any long term goals are to be attained (the work within the Scandilux group).

The Danish/Greenlandic relationship also affected the way in which the SD handled the radar issue. Any further politization of the US installations could easily affect the bilateral relationship

in a negative direction. In recent years the question of greater autonomy has surfaced in Greenlandic politics. At the same time the question of Greenlandic control or further insight into the US bases has been raised. A further politizitation of the issue could amplify these tendencies.

A last factor behind the SD hesitations on the radar issue is to be found at the intra party level. Since 1982 there have been several serious discussions within the party in relation to security policies. This has especially been the case during the numerous resolutions accepted in the Folketing. On several occasions SD members of the Folketing have broken the party discipline and crossed the floor. The leaders of the party therefore had to act very cautiously in these matters in order not to make present cleavages deeper. Especially Svend Auken had a clear interest in a united party in the internal battle over the party's leadership.

To sum up the discussion, it is necessary with some concluding comments between the relationship concerning domestic politics and highly technical strategic issues. It seems that the former has primacy, and that the discussion in Denmark on strategic issues quite often "goes off the track" due to the lack of knowledge on behalf of the political decisionmakers. Only very few politicians within Denmark have a detailed knowledge of strategic issues and on this basis loose speculations are often difficult to get rid of. In this political environment, it is easy for political decisionmakers to look at short term advantages in relation to domestic politics instead of going to the heart of the strategic

debate.

Hopefully, this paper can provide a point of departure for a more informed political and public debate on just one issue in the Danish security policy debate.

To end this thesis, I would like to quote Keld Olesen (former SD Minister for Foreign Affairs):

> **"Nobody with insight and sanity today believe in limited nuclear war - or even that there will be a winner"([244]).**

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[244]: Kjeld Olesen: "Introduction" in "Man har et standpunkt.." Edited by Søren Møller Christensen (Eirene 1984), p.11. He is partly citing Egon Bahr !!.

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